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The effect of a proposed curriculum using assistant instruments in learning some offensive skills in fencing for students

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Abstract

The study aimed to identify the impact of a proposed curriculum using an auxiliary educational tool in teaching some offensive skills in fencing to students. It involved the preparation of proposed educational units using the auxiliary tool to teach these skills. The researchers employed the experimental method with a group design appropriate to the research nature, consisting of an experimental group and a control group with pre- and post-tests. The research sample included 28 students, selected intentionally. Group (A), comprising 14 students, served as the experimental sample, while Group (B), also comprising 14 students, served as the control sample. The educational program was implemented over six weeks, with one educational unit per week. The researchers concluded that the use of the proposed method with the educational tool had a positive and significant impact on skill learning.

1. Research Introduction

1.1 Introduction and Importance of the Research

The modern era is witnessing significant practical developments across all fields of life, driven largely by modern technology. This technological advancement has acted as a powerful incentive for scholars to continue innovating and creating across various disciplines, leading to substantial improvements in educational processes.

The use of educational tools refers to anything that aids in the transfer of knowledge, information, and diverse skills. These tools enhance the ability to acquire skills through various senses, thereby positively influencing the speed of learning motor skills and improving the performance of techniques and tactics (Lazam, 2005)

The variety of activities taught in the Faculty of Physical Education and Sports Sciences compels instructors to adopt diverse methods and curricula, depending on the type of activity being taught. Among these activities is fencing, which is classified as an individual sport that requires students to possess high levels of concentration, precision, and speed in executing skills and applying them correctly. Consequently, offensive skills are crucial for determining performance levels in all sports, despite their varying significance from one sport to another. Thus, offensive skills represent an essential component in athletic training. As the performance of offensive skills improves, so too does the overall level of the sport, and achieving success in the sport is closely tied to a solid skill level (Hammad, 2022)

This study highlights the importance of using educational tools to assist in learning specific offensive skills such as the direct straight attack, changing direction attacks, and diving stop attacks. These tools contribute to providing varied and engaging educational scenarios, enhancing excitement, and saving effort and time for learners.

1.2 Research Problem

The sport of fencing continues to face numerous challenges that hinder its advancement, despite the efforts made to achieve clear and tangible progress. There remains a strong aspiration among researchers and specialists to improve skill performance and to discover innovative approaches. One of the primary responsibilities of teachers in the field of fencing is to enhance the selection of auxiliary educational tools that assist in teaching offensive skills, thereby achieving a higher level of skill performance. Observations made by the researchers revealed a lack of effective utilization of educational tools that could elevate the performance of offensive skills and facilitate better learning, preventing the loss of valuable time. This led to the conclusion that the incorporation of educational tools could significantly contribute to the development of students' offensive skills. Consequently, the researchers aimed to address this problem by devising an educational curriculum utilizing an auxiliary educational tool to aid in learning the execution of offensive skills in fencing.

1.3 Research Objectives

1. To prepare proposed educational units using an auxiliary educational tool to teach specific offensive skills in fencing to students.
2. To identify the impact of the proposed units, utilizing an auxiliary educational tool, on learning specific offensive skills in fencing among students.
3. To examine the differences between pre- and post-test results regarding offensive skills in fencing among third-year students in the Faculty of Physical Education and Sports Sciences at the University of Basra.

4. To analyze the differences in post-test results regarding offensive skills in fencing among third-year students in the Faculty of Physical Education and Sports Sciences at the University of Basra.

Detailed Analysis

Research Problem

The identified challenges in the sport of fencing can stem from various factors, including inadequate training methodologies, limited access to modern educational tools, and insufficient focus on skill development. These barriers can lead to a stagnation in both the individual athlete's performance and the sport's overall growth. The lack of effective educational tools is particularly concerning as they play a crucial role in bridging the gap between theoretical knowledge and practical application.

1. Challenges in Fencing Education:

- Resource Limitations: Many educational institutions may lack access to modern fencing equipment or technology that can enhance learning experiences.
- Traditional Teaching Methods: Relying on conventional methods may not effectively address the dynamic nature of fencing, which requires quick reflexes and strategic thinking.
- Student Engagement: Without engaging educational tools, students may struggle to remain focused and motivated during training sessions.

2. Importance of Auxiliary Educational Tools:

- Auxiliary tools can include visual aids, simulation software, and physical training equipment that help illustrate techniques and strategies. Such tools can make complex skills more accessible, allowing students to grasp concepts quickly and apply them effectively.
- The integration of these tools into teaching practices can significantly reduce the time spent on skill acquisition and enhance the overall learning experience.

Research Objectives

The objectives laid out for this research are comprehensive and target several critical areas:

1. Preparation of Educational Units:

- By developing structured units that incorporate educational tools, the research aims to create a curriculum that facilitates focused skill development. Each unit can be tailored to address specific techniques, providing students with a clear pathway for improvement.

2. Impact Assessment:

- Evaluating the effect of these educational units on students' skill acquisition will provide valuable data. It can also highlight the effectiveness of using educational tools, guiding future teaching practices.

3. Statistical Analysis of Skill Improvement:

- The comparison of pre- and post-test results will offer insights into the tangible benefits of the proposed curriculum. Statistical analysis can help identify whether the improvements are significant and whether certain skills are more effectively taught than others.

4. Post-Test Evaluation:

- Focusing on post-test results will help determine the long-term effectiveness of the educational intervention. Understanding which skills students retain and perform well can inform future curriculum adjustments and highlight areas needing further emphasis.

Conclusion

This research is poised to make a substantial contribution to the field of physical education, particularly in fencing. By addressing the challenges faced in skill development and incorporating effective educational tools, the study aims not only to enhance student learning outcomes but also to set a precedent for innovative teaching practices in sports education. The objectives outlined reflect a commitment to improving athletic performance through structured, evidence-based educational strategies, ultimately leading to a stronger future for the sport of fencing.

1.4 Research Hypotheses

1. There are significant differences between the pre-test and post-test results of both the experimental and control groups in favor of the post-test.
2. There are significant differences between the post-test results of the experimental and control groups in favor of the experimental group.

1.5 Research Fields

1. Human Field: Third-year students in the Faculty of Physical Education and Sports Sciences at the University of Basra.
2. Spatial Field: The fencing hall at the Faculty of Physical Education and Sports Sciences at the University of Basra.
3. Temporal Field: From November 5, 2023, to January 10, 2024.

2. Research Procedures

2.1 Research Methodology

The researchers utilized an experimental method suited to the nature of the study, employing a design that includes both experimental and control groups with pre- and post-tests.

2.2 Research Sample Population

The sample was intentionally selected from third-year students in the Faculty of Physical Education and Sports Sciences at the University of Basra for the academic year 2023-2024. These students are studying the curriculum set forth by the sectoral authority for physical education colleges in Iraq, which comprises 178 students across eight groups. The researchers used a simple random sampling method to select 28 students from groups A and B, representing approximately 15.73% of the total population. The sample was divided into two groups: Group A as the experimental group (14 students) and Group B as the control group (14 students). Additionally, an exploratory sample of 10 students was taken, representing 5.61%. The researchers ensured equivalence among the members of the sample.

Table (1)

It shows the equality of the sample individuals in the research variables between the experimental and control groups for performing offensive skills

Stages of Performance	Experimental Group		Control Group		Value (t) Calculated	Result
	S	A	S	A		
Straight Direct Attack	3.42	0.64	3.35	0.62	0.9	Not Significant
Attack with Change of Direction	3.64	0.49	3.26	0.61	1.6	Not Significant
Diving Stop Attack	2.92	0.61	2.78	0.80	5.2	Not Significant

At a significance level of (0.005) with 14 degrees of freedom

2-3 Devices and Tools Used in the Research

-Video camera, plasma screen, calculator number 6, electrical refereeing device, fencing player preparations, educational means

****2-4 Field Research Procedures:****

2-4-1 Working Mechanism of Our Research Groups:

The work of the two groups is similar in the preparatory and concluding sections.

In the main part, the researchers of the experimental group used a device made by the researcher (Sarah Sami Shibib). It is an electro-mechanical device that assists in learning some offensive skills. The educational means is used here once in the position of defense, as in the skill of a straight direct attack and an attack with a change of direction, and once in the position of attack in the attack to stop the dive. As for the control group, they used the exercises only for the purpose of developing the students skills, giving feedback for each exercise in order to correct mistakes.

2.4.2 Design and Manufacture of the Device Used in the Research (Shabib, Abdullah, & Makki, 2017)

The researcher, Sarah Sami, designed a device to obtain objective results on the level of skill performance of fencing players. A mechanical electrical device was designed and manufactured by the researcher to evaluate skill performance. In order to measure these aspects, the researcher had to use this type of mechanical device that provides assistance and credibility to the measurement of these aspects, which are often measured through peer assistance and refereeing by referees. In addition, they do not provide an objective evaluation of the measurement of these aspects. The researcher designed a mechanical and electrical device that assists the test subject in performing some offensive and defensive skills through mechanical forward, backward, and side-to-side movements at different speeds. Therefore, the manufactured device gives us movements similar to the movements of a fellow player, thus helping the test subject by giving him similar opportunities to each fencer in these tests accurately and objectively, giving the desired benefit in evaluating the performance of the players.(Shabib, Abdullah, & Al-Majidi, 2017)

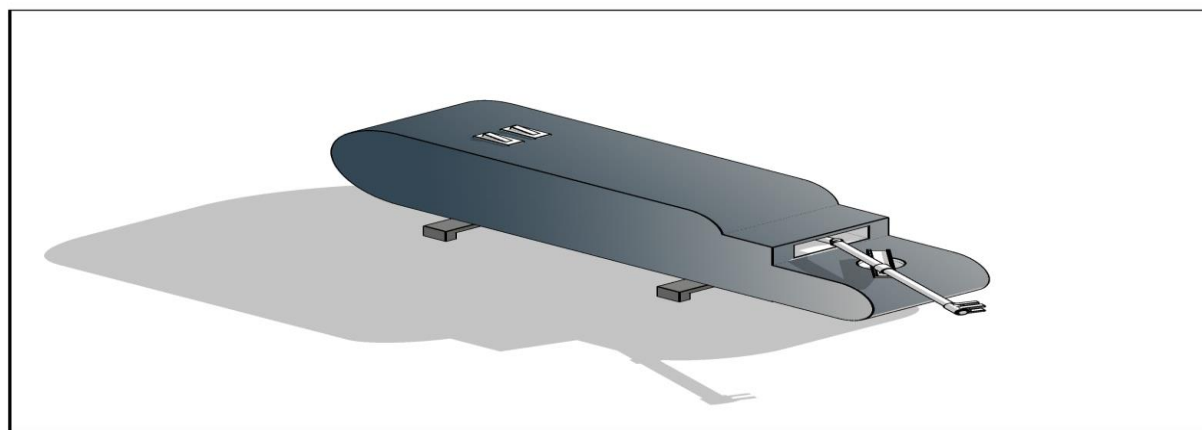


Figure (1) shows the fabricated device

2-4-2-1 Specifications of the assistive device:

The device is an Iraqi-made electro-mechanical device that operates on a 12-volt power source. The manufactured assistant device consists of an iron structure with movable arms via two electric

actuators, providing two types of motion: reciprocating motion (back and forth) and lateral motion (left and right). This device has been calibrated and tested at the University of Basrah, College of Engineering, Department of Mechanical Engineering, where it was proven to have a high degree of accuracy, as per the inspection certificate it has obtained.

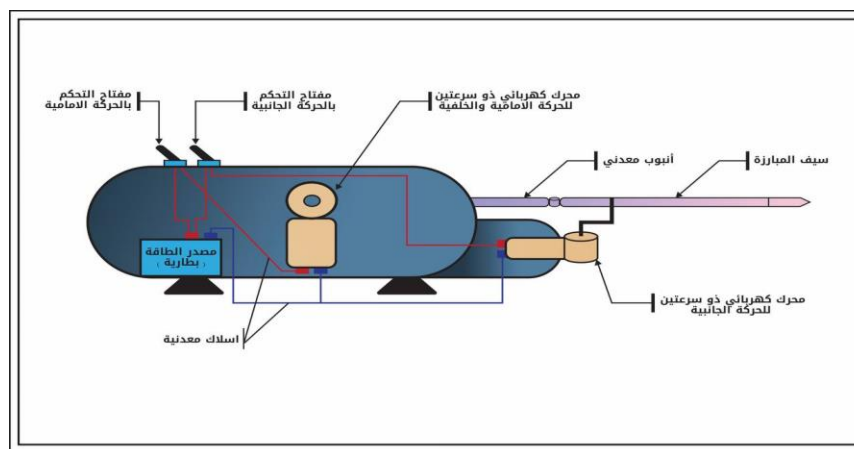


Figure (2) shows the electrical schematic of the device

Manufactured Device Components (Mechanical)

- A rectangular iron box made of a 2-mm thick sheet, 60 cm long and 30 cm high.
- Four rubber rules were used for the base, with a height of 5 cm each. They were fixed to the bottom of the device. To fix the device, two square iron tubes, 40 cm long, were used.
- A gearshift arm that moves right or left.
- I used three brackets to attach the sword to the arm.
- Using a fencing épée, a blade without a handle set.
- The use of so-called sliding supports (bushing No. 3) to fix the sliding axes.
- Use a gearshift lever that moves back and forth.
- A rule was established at the forefront of the forward arm to secure the fencing sword weapon.
- Wrap the device externally with a rectangular wooden box, open from the bottom. Wrap the box with a layer of sponge and cloth to reduce the sound of the engines, and secondly, to give the device a decent shape.
- Cover the moving arm with a plastic arm (mannequin arm).

4-2-3 Electrical Device Components

- A two-speed electric motor that works in both right and left directions is used for forward and backward movement. Another electric motor is used for right and left movement.
- A two-key electrical control panel with two speeds to control the movement of the device arm, the key ¹(forward and backward movement) where the first key was to move forward and backward. When the device arm moves forward, the test player begins to pull his arm, and when the device arm retreats, the player performs a straight direct attack, taking a direct touch in the same direction as the opponents weapon. As for key², its function was to move sideways (right-

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3- Ms. Sarah Sami Shabib: Tests - Fencing (College of Education and Sports Sciences / University of Basra)

left) when the device arm moves to the right, the player starts to change from below the opponents weapon, and when the direction of the device arm changes, the player passes his weapon from under the blade of the device arm to perform the attack with a change of direction. When we operate the two keys together, the arm moves forward, backward, left and right at the same time, giving us a movement similar to the movement of the opponents arm.

2-4-3 Tests approved by the research

Researchers relied on three evaluators to assess performance. [1] By extracting the average of the evaluators, the final grade for each student in the lab is calculated by having the evaluators attend the exam.

- Performance specifications: The student performs the fencing skill, where the introductory section is (3) degrees, the main section is (4) degrees, and the concluding section is (3) degrees.
- Registration: The evaluators assess the skills of each student. Each evaluator gives (one degree) to each student out of ten degrees according to the chosen evaluation.

2-4-4 Exploratory experiment

In order to identify the difficulties and obstacles that may arise during the implementation of the main experiment, the researchers conducted a pilot experiment to learn about the pros and cons they may encounter during the test to avoid them.

 The pilot experiment was conducted on (10) students from the third stage of the College of Physical Education and Sports Science, University of Basra, on Thursday, 2/11/2023, at exactly 11:00 am. The aim of the experiment was

- Identifying the main obstacles facing researchers when conducting tests
- Make sure that the educational resources used in the research are valid and reliable.
- Preparing and setting up the place for the experiment
- Time taken for the experiment with fixed test duration

2-4-5 Pre-tests:

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2-4-6 educational units.

The implementation period was six (6) weeks from 11/12/2023 to 12/24/2023 and thus on Sundays, the proposed educational unit was developed using literature on teaching methods and offensive skills. Number of Academic Units (6) Academic units consist of three sections The duration of the educational unit was (90) minutes

The preparation period is (25) minutes and the main part is (55) minutes where the attacking student uses straight attack skills and the attacking student moves tons on the opponent's goal (teaching method) and uses touch and attack skill changes direction. in which the attacker raises his armed arm to threaten the target and after the defender fires and stop-diving attack skills students defend from standby while extending the weapon toward the attacker's target (Ali Al-Khaqani, 2007) closing portion is (10) min

2-4-7 Post-tests.

After conducting the basic experiment at the specified time, the researchers conducted research tests on Sunday, 31.12.2023, in the same way and under the same conditions as the previous tests.

2-8 statistical methods:

To obtain the results (s.p.s.s.), the researchers used a statistics bag

3- Analysis and discussion of research results

3-1 Presentation and discussion of results

3-1-1 Results are displayed

****Table (2)****

Shows the value of the mean, standard deviation, and the calculated and table (t) values for the performance evaluation grades for the experimental and control groups in the pre and post-tests

Significance	Sig	T	Error	F	Posterior		Anterior		Skills	Groups
					O	S	O	S		
Significant	0.000	15.09	0.30	4.64	0.82	8.07	0.64	3.42	Straight	Experimental
Significant	0.000	19.69	0.22	4.50	0.61	8.07	0.51	3.57	Change direction	
Significant	0.000	19.69	0.22	4.50	0.61	8.07	0.51	2.92	Stop by diving	
Significant	0.000	15.31	0.22	3.50	0.65	6.50	0.78	3.40	Straight	Control
Significant	0.000	8.29	0.28	2.40	0.77	5.80	0.63	3.13	Change direction	
Significant	0.000	13.25	0.23	3.13	0.70	6.26	1.06	2.80	Stop by diving	

Degree of freedom (14) and level of significance (0.05) = 2.14T value

Table (3)

Shows the results of the analysis of variance between the experimental and control groups in the post-tests for the research variables

Skill Stages	Experimental Group		Control Group		Value (T) Calculated	Result
	S	O	S	O		
Straight Direct Attack	8.07	0.82	5.78	0.80	7.4	Significant

Attack by Changing Direction	8.07	0.61	6.21	0.69	7.4	Significant
Stop Dive Attack	7.71	0.72	5.92	0.73	6.1	Significant

****Discussion of the results:****

Looking at the Tables (2 and 3) regarding the test results, there is a clear development for the experimental and control groups. There was also a clear improvement in the experimental group that used waiting time in the learning process.

The researchers say that this improvement in the experimental group used educational tools to learn negative skills that grabbed the students' attention. Working with tools, equipment and techniques are factors that bring results in sports activities. Learning methods play an important role in providing learning resources to students and the psychological aspects they provide are very important in setting goals and aspirations as well as achieving good performance. . The lesson has become more interesting and the world is interesting and full of model performances. It also contains the goal to be achieved. They also play an important role in reducing the workload of teachers and shortening the learning time. (Al Diwan, 2009)

Researchers have attributed this improvement in learning and the significant differences in favor of the experimental group to the effectiveness of the use of educational tools in learning some difficult skills. Teaching materials give learners more fun and motivation to master the puzzle techniques. Both “Saad Jalal and Mohamed Hassan” confirmed this and explained that the use of teaching aids is a way to train students and develop important activities, thus improving their practice skills. (Jalal & Hassan, 1978)) (Hamad et al., 2024)

" Good educational resources and their good use by the teacher helps to implement the teaching units well and qualitatively and makes the teaching non-traditional. (Kazim, 2017))"

The effectiveness of the training sessions used by the support training tool and leading to an increase in the level of learning of throwing skills contributed to the improvement of the learning performance of throwing skills. The use of educational aids in learning and flexibility in the use of educational components have had a significant impact on students and improved their learning outcomes. (Al-Najm, 2008)

5- Conclusion and Recommendations

5-1 Results

- 1- The utilization of teaching materials indicates that the instructional method is effective and beneficial in education.
- 2- The teaching method encourages students to study diligently and motivates them to do so.
- 3- The proposed lessons and complementary teaching methods lead to enhancements in the performance of offensive skills in fencing.

5-2 Recommendations:

- 1- Emphasize the use of skills-learning tools as they supplement the curriculum and foster skill development.
- 2- Employ training methods that facilitate the teaching of fencing skills, including those deemed bad or negative.
- 3- Prioritize providing the necessary tools and resources for learning fencing skills through universities and colleges of physical education.

4- Conduct similar courses with adapted teaching methods for diverse age groups, including both men and women.

Thank you for your attention.

We gratefully acknowledge the research sample provided by third-year students of Physical Education and Sports Science at Basrah University.

Conflict of Interest Statement:

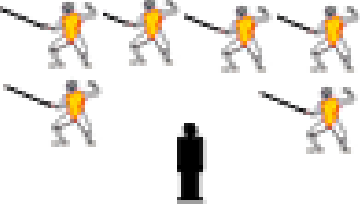
The authors declare that they have no conflict of interest.

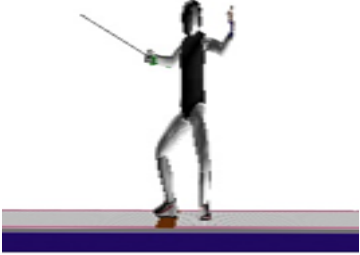
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Educational unit	First and second	Date :
Educational goal	Teaching students about order and calmness	Time : 90 minutes
Learning objective	Teaching the skill of a straight attack	Stage: Third Number of students: 14
Tools used	Educational aid	
Behavioral objective	Students perform a straight attack with foil fencing weapon in a disciplined manner	

Unit Sections Educational	Time	Educational Unit Content	Organizational Aspect	Notes
<p>Preparatory Section A-Introduction</p> <p>B-General and Specific Preparatory Exercises</p> <p>Main Section Educational Activity</p> <p>Practical Activity Conclusion Section</p>		<p>Attendance at the stadium, registration of attendance and giving some directions</p> <p>-Usual run – normal jog – jog with arms rotating forward and backward – side jog – jog with high knee lift – jog touching the ground with hands alternately + sprint to the end of the stadium</p> <p>-(Standing) Jump on the spot with three counts, on the fourth count jump high (repeat the exercise with knees tucked into the chest 4 times)</p> <p>-(Standing) Alternating forward lunges</p> <p>-(Standing) Zigzag jump over the bench</p>	<p>▲ *****</p> <p>*****</p> <p>*****</p> <p style="text-align: center;">▲</p>	<p>Stand in an organized manner to start the lesson</p> <p>**Confirming the initial conditions are correct**</p>
<p>Preparatory Section A-Introduction</p> <p>B-General and Specific Preparatory Exercises</p> <p>Main Section Educational Activity</p>		<p>-Demonstrate the full skill to the students and then explain the straight attack skill</p> <p>-Explanation of the skill by the teacher in front of the students in theory and practice</p> <p>-From standing – take the ready position and extend the armed arm and raise the front foot as far forward as possible, return to the ready position, repeat (2 times)</p> <p>-Take three steps back and then one step forward, then lunge</p>		<p>- Introduces students to the direct attack skill, its characteristics, its importance and its proper use</p>

<p>Practical Activity Conclusion Section</p>		<ul style="list-style-type: none"> - (Ready position) Students perform the straight lunge with their partner, repeat (2 times) - (Ready position) Step forward and then perform a straight lunge with your partner, repeat (4 times) -From the lunge position, extend the armed arm directly towards the partners chest, repeat (2 times) -Each student performs these exercises in front of the educational means for 3 minutes and then returns to the group 		
<p>Preparatory Section A-Introduction B-General and Specific Preparatory Exercises Main Section Educational Activity Practical Activity Conclusion Section</p>				<p>Practice this skill several times with a colleague</p> <ul style="list-style-type: none"> - Ensure proper performance - Emphasis on working in groups to perform the skill, group together and group learning method - Give feedback