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The effect of using the McCarthy model (4 mat) in learning some basic skills in fencing

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Abstract

The researcher conducted his study, which was entitled (The effect of using the McCarthy model (4 mat) in learning some basic skills in the game of fencing), the aim of which was to identify the effect of using a new learning strategy in learning some basic skills in the game of fencing. The researcher used the experimental method by designing the two groups. Experimental and control, and through pre- and post-tests, the research population was chosen intentionally, and they are the students of the third stage of the Department of Physical Education and Sports Sciences at the University of Wasit, whose total number was (100) students. The research sample was chosen from them randomly, and their number was a total of (60) students were divided into two groups, a control group and an experimental group. The number of each group was (30) students. After the researcher completed all field research procedures, including applying the educational strategy prepared by him and conducting pre- and post-tests, he concluded several conclusions, including :The effectiveness of using the traditional and new educational methods prepared by the researcher in learning some basic skills in fencing among third-year students in the College of Physical Education and Sports Sciences, University of Wasit. There are statistically significant differences between the pre-tests and post-tests for the control and experimental groups in skills (accuracy of stabbing, speed of stabbing, speed of leg movements (advancing), speed of leg movements (regression)) and in favor of the post-tests. According to these conclusions, several recommendations were made, including: Other studies should be conducted by researchers and teaching staff using the McCarthy model (4 mat), and using an educational method based on the McCarthy model to develop physical abilities and other skills in fencing.

Keywords: Learning, using, conducted

Introduction

Scientific development is nowadays an essential means for nations in their competition and challenges to advance in all aspects of life, including education in the field of physical education and sports sciences. By keeping pace with scientific progress, the education process can be stimulated and improved in general, and this has a positive impact on the quality of education and learners. Therefore, it is necessary to equip the individual athlete and learner with high skills that enable him to face the challenges of the times in the field of physical education and sports sciences, including teaching methods. In addition, kinesthetic learning, as the main goal of the educational process must be to teach the skills and knowledge required to the learner with high efficiency and with the least possible effort and time. Accordingly, the physical education teacher works seriously to improve teaching methods in order to inspire learners and help them achieve educational goals. By using the best methods, the teacher can raise the level of learners' performance in motor skills.

Fencing is one of the sports taught in colleges and departments of physical education and sports sciences, but despite the efforts made to develop fencing, it faces many challenges that hinder its progress forward. Researchers and specialists seek to improve the level of skill performance and discover everything new in this competitive field. Since fencing is a competitive sport that requires physical, skill, tactical, and psychological requirements, the teaching and learning process must rely heavily on effectively transferring information from the teacher to the learner using a method appropriate to it. This diversity of educational methods and methods contributes effectively to eliminating the learner's boredom and enhancing the learning process in a positive way. One of these modern methods and

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approaches in learning and teaching is the McCarthy model (4mat), which depends primarily on the learner's preferences in learning, as it combines the four learning methods, which It begins with the process of sensory perception and ends with the process of performance. Hence, the importance of the current research lies in using a modern learning method to learn some basic skills in the game of fencing and identifying what are the effects and results of using this method in developing it among learners.

Research problem

The process of learning motor activities and sports skills depends greatly on the educational methods used. In order to achieve the best results in learning any mathematical activity, more research and studies must be conducted to reveal scientific facts related to mathematical learning. Accordingly, and through the researcher's work as a teacher at the University of Wasit, College of Physical Education and Sports Sciences and the subject of fencing, he found that the process of teaching this subject and teaching its basics is through traditional methods, and these methods tend toward monotony and conformity on the one hand and toward boredom and lack of creativity on the other hand, in order to achieve Effective learning meets the needs of female students. Their personal learning styles must be taken into account due to differences in their personalities and thinking styles. Knowing the personality type of female learners increases the efficiency and effectiveness of the learning process. Therefore, the researcher worked on experimenting with modern learning methods in learning some fencing skills, to evaluate the effectiveness of these methods. The teacher should search for modern methods and determine the most appropriate ones based on the thinking style, desire and preference for learning of each learner, and the goal of learning. The primary goal is to enable learners to achieve the final stages of the skill in the best possible way and to ensure that they understand and retain information effectively.

Research objective

- Building educational units according to the McCarthy model (4 mat) to learn some basic skills in fencing.
- Identifying the impact of the proposed strategy on learning and developing some basic fencing skills among students of the College of Physical Education and Sports Sciences at the University of Wasit.

Research hypothesis

- There are significant differences in learning some basic skills between the control group and the experimental group, in favor of the experimental group.

Research fields

- **Human field:** third stage students in the College of Physical Education and Sports Sciences / University of Wasit.
- **Time field:** from 10/24/2023 to 22/12/2023.
- **Spatial field:** Fencing hall in the College of Physical Education and Sports Sciences / University of Wasit.

Definition of terms

McCarthy Model (4 Mat): It is one of the modern educational strategies and is called the Four Mat Model (4 Mat) because it focuses on four patterns intertwined with each other like a fabric, which states that individuals learn information and skills, in one of two ways: feelings or thinking, and the stages

of this model are based on the approaches. The different processes of receiving and processing information, and the processes of perception and processing describe a comprehensive learning process for learners (Al-Salem: 2015: 45). Fencing: "It is one of the sports games that requires comprehensive preparation in all physical, psychological, tactical, artistic and mental aspects and relies on various sciences such as movement, physiology, biomechanics and other sciences" (Fadel: 1989: 81) ^[4]

Research methodology and field procedures

Research methodology

Choosing the appropriate approach is vital to the success of the research, as the choice depends on the nature of the problem that the researcher seeks to solve and the goal that he wishes to achieve. The nature of the problem and the goal to be achieved include the main factors that determine the type of approach appropriate for the study. In his current study, the researcher relied on the experimental method that includes pre- and post-measurement, and includes the design of two equal control and experimental groups. "The experimental method with pre- and post-measurement by designing two equal control and experimental groups is considered one of the effective methods in scientific research, as it helps in reaching reliable and accurate results that are applicable and reliable" (Nabil *et al.*: 1985:407) ^[3]

Research community and sample

Research community

The research community was chosen by the researcher in an intentional way, and they are the students of the third stage, in the College of Physical Education and Sports Sciences - University of Wasit, as the subject of fencing is part of the curriculum taught for this stage, and the total number of students in this stage reached (100) male and female students.

Research sample

From among the students of the third stage who represent the research community, the sample was chosen randomly by drawing lots, and its number was (60) male and female students distributed into several groups: the control group, which numbered (30) students, as well as the experimental group, which numbered (30) students.

Means, tools and devices used

Means used

In his current research, the researcher used the methods that help him complete his research, which are:

- Arab and foreign sources
- Educational units to teach some basic fencing skills according to the McCarthy model.
- Standardized skill tests for (accuracy of stabbing, speed of stabbing, speed of leg movements (advancement), speed of leg movements (regression)).
- A form to evaluate the technical performance test for skills (accuracy of stabbing, speed of stabbing, speed of leg movements (advancing), speed of leg movements (retreat)) for the research sample.
- Data dump form.
- Personal interviews.

Tools and devices used

The researcher used the following tools and devices:

- Duel Hall
- Shuffle weapons (12)

- Metal measuring tape to measure length (cm)
- Chalk.
- Manual scientific calculator (Casio)
- Stopwatch (2)
- Whistle.

Field research procedures

Determine the tests

In order to achieve the research objectives and identify the effect of the teaching method prepared by the researcher on the skills that were chosen as variables for the research, the researcher must choose tests for these skills and these tests are: (Hajr: Hajar: 43-44)

First: Testing the accuracy of the Stab:

- **Test objective:** Knowing the measurement of the player's stabbing accuracy
- **Tools used:** (a target with test circles drawn on it, an epee weapon, an area free of obstacles)
- **Description of test performance:**
 - From a standby position behind the drawing line, the player begins to perform a straight stab in the direction of the target and in the area determined by the researcher.
 - The learner is given four attempts for each of the marked circles.
- **Scoring:** The number of correct attempts in which the person was able to touch the circle from within is recorded.

Second: Stabbing speed test

Test objective: Measure the speed of the stabbing frequency.

Tools used: Shingles - a marker on which 6 circles with a diameter of 10 cm and dimensions of 5 cm are drawn to the wall, as in the figure. The height of the circle is (1)

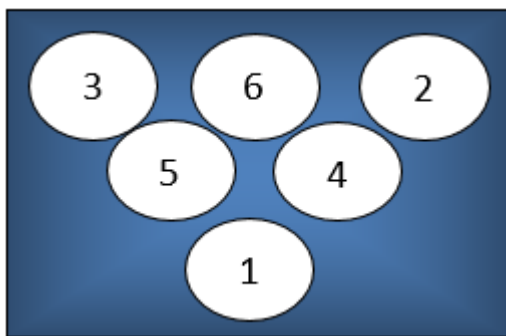


Fig 1: Shows how the circles are distributed

Suitable for the player's height. Adhesive tape for fixing Stabbing distance.

Description of test performance: Upon hearing the signal, the tester challenges the person specified in front of him. Scoring: Counts the number of correct lunges that can be performed in 15 seconds.

- **Third: Testing the speed of leg movements (progress)**
- **Test objective:** Measuring the speed of advancing a distance of 14 meters.
- **Tools used:** (duct tape - 2 stopwatches - fencing field divided into two parts).
- **How to perform the test:** From the standby position, the tester stands on the starting line marked on the field so that every 2 testers perform together for the element of competition in the performance. When the signal is heard, the clock starts, the player moves forward at full

speed to reach the finish line, and when the back foot touches the finish line, the clock turns off.

Performance description

- The test is conducted between players, each player in a section.
- Maintain standby mode while performing the test.
- Performing forward progress in a correct manner.
- Progress in a straight line.
- The watch locks after the back foot touches the line.
- **Scoring:** Time is calculated to the nearest 1/100 second. You give three attempts and the best attempt is counted.

Fourth: Testing the speed of leg movements (regression)

- **Test objective:** Measuring the speed of retreating over a distance of 14 metres.
- **Tools used:** - adhesive tape - 2 stopwatches - a fencing field divided into two parts.
- **How to perform the test:** From the standby position, the beginner stands on the starting line with his back facing the field, so that every 2 testers perform together for the purpose of competing in the performance. When the signal is heard, the clock starts, the athlete steps back at full speed to reach the finish line, and when the front foot touches the finish line, the clock stops.

Conditions for taking the test

- The laboratory stands with its back facing the fencing field.
- The test is conducted between two testers, each player on his own section.
- Maintain standby mode during the test.
- Performing the backwards move in a correct manner.
- Retreat in a straight line.
- The stopwatch stops after the front foot touches the finish line.
- **Scoring:** Time is calculated to the nearest 1/100 second. You give three attempts and the best attempt is counted.

Pre-tests

In order to control the variables and identify the effect of the educational program proposed by the researcher, which was based on an educational strategy based on the McCarthy model, the researcher conducted pre-tests for the research sample and for the control and experimental groups. These tests were conducted on Sunday, 29/10/2023.

Educational units:

Through the researcher's work as a teacher in the College of Physical Education and Sports Sciences, and through his experience in his field of work, he worked to build educational units according to the McCarthy model (4 MAT), which was based on the principle of exploiting and benefiting from the learner's preferences in learning and grading in learning according to its stages. The four, which are (reflective observation, concept crystallization, active experimentation, and tangible physical experiences), and the researcher applied this strategy to the experimental group of the research sample, which numbered (30) students, with a number of (16) educational units and an average of two units per week, while The traditional method was applied at the same time to the control research sample the implementation of this training program took (8) weeks, with two educational units per week. From the date of Sunday, 3/11/2023, the researcher began implementing part of the research

procedures, which is giving the educational units based on the McCarthy model, to the research sample represented by the experimental group, who are third-year students in the College of Physical Education and Sports Sciences at the University of Wasit, and this teaching and learning process has continued. For a period of (8), at a rate of (2) educational units per week until Sunday 10/12/2023, while the strategy or traditional method was applied at the same time to the control group.

Post-tests

After the researcher completed teaching the subject and in accordance with the educational program prepared by him on Tuesday, 10/12/2023, the researcher conducted post-tests for the research sample and for both. The two groups, the control group and the experimental group, and the data obtained from

these tests were recorded, to conduct statistical transactions on them and to come up with research conclusions.

Statistical methods: The search data was processed through the Statistical Package for the Social Sciences (SPSS).

Presentation, analysis and discussion of the results:

Presentation, analysis, and discussion of the results of the pre- and post-tests for the skills (accuracy of stabbing, speed of stabbing, leg movements (advancing, retreating)) for the control group.

According to the data obtained by the researcher after conducting the pre- and post-tests for the control group and analyzing them, the results shown were obtained as in Table (1)

Table 1: Shows the results of the pre- and post-tests for the skills (accuracy of stabbing, speed of stabbing, leg movements (advancing, retreating)) for the control group.

Variables	Measuring unit	Pretests		Posttests		Calculated t value	Tabular t value	Type sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
Accuracy of stab	Number	13.04	0.071	17.00	0.023	2.749	1.697	Sig
Stabbing speed	Number	11.124	0.062	13.55	0.54	3.325		Sig
Speed of leg movements (progress)	Second	70.54	0.497	61.33	0.643	2.675		Sig
Speed of leg movements (regression)	Second	64.116	1.022	58.387	1.012	3.019		Sig

It is clear from Table (1) that the data obtained by the researcher from the pre- and post-tests for the control group, after processing them statistically, were as follows: The arithmetic mean in the pre-test for the control group in the skill of stabbing accuracy was (13.04) and a standard deviation of (0.071), while the mean was (0.071). The calculation for the same skill and the experimental group was (17.00) with a standard deviation of (0.023), while the calculated (t) value was (2.749), which indicates that it is greater than its tabulated value of (1.697), meaning that the significance of the differences is significant with an error level of (0.05). While the dimensional arithmetic mean for the control group in stabbing speed was (11.124) and a standard deviation of (0.062), while the arithmetic mean for the experimental group was (13.55) with a standard deviation of (0.054), while the calculated (t) value was (3.325), which indicates It is greater than its tabular value of (1.697), meaning that the significance of the differences is significant. For the control group, its value reached (70.54) and a standard deviation of (0.497), while the arithmetic mean of the post-test for the experimental group for the same skill reached (61.33) with a standard deviation of (0.643), while the calculated T-value reached (2.675). Which indicates that it is

greater than its tabular value of (1.697), meaning that the significance of the differences is significant with an error level of (0.05)

Table (1) also shows us that the arithmetic mean values for the speed of movement of the legs (regression) for the control research group in the pre-test reached (64.116), while the standard deviation was (1.022), while the arithmetic mean for the post-test for the control group for the same skill reached (58.387), with a standard deviation of (1.012). The table above also shows us that the calculated (t) value was (3.019), which indicates that it is greater than the tabulated value of (1.697), meaning that the significance of the differences is significant with an error level of (0.05).

Presentation, analysis, and discussion of the results of the pre- and post-tests for the skills (accuracy of stabbing, speed of stabbing, leg movements (advancing, retreating)) for the experimental group.

According to the data obtained by the researcher after conducting the pre- and post-tests for the experimental group, and analyzing them, the results shown were obtained, as in Table (2)

Table 2: Shows the results of the pre- and post-tests for the skills (accuracy of stabbing, speed of stabbing, leg movements (advancing, retreating)) for the experimental group.

Variable	Measuring unit	Pretests		Posttests		Calculated t value	Tabular t value	Type sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
Accuracy of stab	Number	13.76	0.043	20.11	0.612	3.017	1.697	Sig
Stabbing speed	Number	11.612	1.002	14.00	0.91	4.23		Sig
Speed of leg movements (progress)	Second	71.22	1.031	55.18	1.111	2.932		Sig
Speed of leg movements (regression)	Second	6316	0.079	49.201	1.416	3.114		Sig

It is clear from Table (2) that the data obtained by the researcher from the pre- and post-tests of the experimental group, and after processing them statistically, were as follows:

The arithmetic mean in the pre-test of the experimental group in the skill of accuracy of Stab reached (13.76) and a standard deviation (0.043), while the arithmetic mean for the same skill

in the post-test was (20.11), and the standard deviation was (0.612), while the calculated (t) value was (3.017), which indicates that it is greater than its tabulated value of (1.697), i.e. The significance of the differences is significant at the error level (0.05). While the arithmetic mean of the pre-test for the experimental group in stabbing speed was (11.612) and a standard deviation of (1.002), while the arithmetic mean of the post-test, for the same skill, was (14.00), and a standard deviation of (0.091), while the calculated (t) value was (4.23), which indicates that it is greater than its tabular value of (1.697), meaning that the significance of the differences is significant.

The table above showed us that the pretest arithmetic mean for the speed of movement of the legs (progress) for the research sample, the experimental group, reached a value of (71.22) and a standard deviation of (1.071). As for the arithmetic mean for the posttest of the experimental group for the same skill, its value reached (55.18). With a standard deviation of (1.111), while the calculated (t) value was

(2.932), which indicates that it is greater than its tabulated value of (1.697), meaning that the significance of the differences is significant with an error level of (0.05).

Table (1) also shows us that the arithmetic mean values for the speed of movement of the legs (regression) for the control research group in the pre-test reached (63.16), while the standard deviation was (0.079), while the arithmetic mean for the post-test for the control group for the same skill reached (49.201), with a standard deviation of (1.416). The table above also shows us that the calculated (t) value was (3.114), which indicates that it is greater than the tabulated value of (1.697), meaning that the significance of the differences is significant with an error level of (0.05).

Presentation and analysis of the results of the differences in the post-tests of skills (accuracy of stabbing, speed of stabbing, movements of the legs (advancing, retreating), between the control and experimental groups:

Table 3: It shows the results of the differences in the post-tests for the skills (accuracy of stabbing, speed of stabbing, leg movements (advancing, retreating)) between the control and experimental groups.

Variable	Control group		Experimental group		Calculated T value	Tabular T value	Type sig
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
Accuracy of Stab	17.00	0.023	20.11	0.612	3.012	2.000	Sig
Stabbing speed	13.55	0.54	14.00	0.91	3.477		Sig
Speed of leg movements (progress)	61.33	0.643	55.18	1.111	3.320		Sig
Speed of leg movements (regression)	58.387	1.012	49.201	1.416	3.661		Sig

It is clear from Table (3) that the results obtained by the researcher from the post-tests for the control group were as follows: The arithmetic mean of the post-test for stabbing accuracy was (17.00) and a standard deviation of (0.023), while the arithmetic mean of the post-test for the experimental group for stabbing accuracy was (20.11). With a standard deviation of (0.91), while the calculated value of (T) was (3.012), which indicates that it is greater than its tabulated value of (2.000), meaning that the significance of the differences is significant with an error level of (0.05).

While the arithmetic mean of the post-test for the control group with stabbing speed was (13.55) and a standard deviation of (0.54), while the arithmetic mean of the post-test for the experimental group with stabbing speed was (14.00) with a standard deviation of (0.081), while the calculated (t) value was (3.477). Which indicates that it is greater than its tabulated value of (2.000), meaning that the significance of the differences is significant with an error level of (0.05).

The table above also shows us that the arithmetic mean of the post-test for the speed of movement of the legs (advancement) for the control research sample reached a value of (61.33) and a standard deviation of (0.643). As for the arithmetic mean of the post-test for the speed of movement of the legs (advancement), it reached a value of (55.18). with a standard deviation of (1.111), while the calculated (t) value was (3.320), which indicates that it is greater than its tabulated value of (2.000), meaning that the significance of the differences is significant with an error level of (0.05) Table (3) also shows us that the value of the arithmetic mean for the speed of the movements of the legs (regression) for the control research group in the post-test was (58.387), while the standard deviation was (1.012), while the arithmetic mean for the post-test for the experimental group was (49.201), with a standard deviation of (1.416). The table above also shows us that the calculated T value reached (3.661), which indicates that it is greater than the tabulated value of (2.2000), meaning

that the significance of the differences is significant with an error level of (0.05).

Discussions

By observing the results in Tables (1, 2), it was revealed that there were significant differences between the pre- and post-tests for both the control and experimental groups. It is clear that the post-test results for the skills (accuracy of stabbing, speed of stabbing, leg movements (advancement), leg movements (regression)) were better, which means that there was progress in learning the skills by the control and experimental groups. The main conclusion was that the use of both traditional and new approaches based on McCarthy's model contributed to achieving this progress.

The researcher attributes that the reason for the development taking place in learning the skills under study below, in the control and experimental groups, is their use of codified and previously tested educational methods in education, and thus their results are clear in learning, as "the learning process is to bring the learner to the highest level of understanding of the educational material or Mastering them, or performing skills properly and smoothly, as learning is "a phenomenon that can be felt but is difficult to describe. Part of this difficulty is due to the fact that learning cannot be observed directly but can be inferred through the individual's performance and behavior" (Ahmed: 1996: 47) ^[1]

Table (3) also shows us the results of the differences between the post-tests of the control group and the experimental group. We find that there is a clear difference in those results, and in favor of the post-tests of the experimental group. The researcher attributes the reason for this development to the effect of the effectiveness of the new learning method that the researcher used. He applied it to the experimental group in learning some skills in fencing, as the educational units were prepared according to the correct scientific method and accurately, based on scientific sources and previous studies

and research. They were prepared and built according to what the student needs in learning the skills from a method that simplifies how to perform and also works to employ all The mental and physical capabilities that the student possesses in learning these skills with the help and guidance of the subject teacher, and until he masters the performance. The researcher adopted the use of an instructional strategy based on the McCarthy model (4 Mat), as this educational model contributed to identifying the main ideas in the subject studied, and classifying the information. This enabled the students to distinguish the main skills from the rest of the skills, and thus professionalism in performance. In addition, it made the students feel excited and excited about performing the skills to be learned, as this method “transforms the process of acquiring knowledge from inactive processes into a mental and physical activity that leads to better mastery.” content and linking its elements to each other, which positively affects the mental and physical abilities of students” (Ibrahim: 2018: 21) [2].

Conclusions and recommendations

Conclusions

Through the data obtained by the researcher upon completing his research procedures involved in applying the new educational strategy and conducting pre- and post-tests, and after treating this data statistically, he concluded the following:

The effectiveness of using the traditional and new educational methods prepared by the researcher in learning some basic skills in fencing among third-year students in the College of Physical Education and Sports Sciences, University of Wasit.

- There is a clear difference in the effect of the methods used. The method based on the McCarthy model had a clear and greater effect than the traditional method in learning some basic skills in fencing among the research sample.
- There are statistically significant differences between the pre-tests and post-tests for the control and experimental groups in skills (accuracy of stabbing, speed of stabbing, speed of leg movements (advancing), speed of leg movements (regression)) and in favor of the post-tests.
- There are statistically significant differences in the post-tests between the control and experimental groups in the research variables (accuracy of stabbing, speed of stabbing, speed of leg movements (advancing), speed of leg movements (regression)) and in favor of the experimental group.

Recommendations

- Conducting other studies by researchers and teaching staff using the McCarthy model (4 mat).
- Holding training and development courses for teachers, the purpose of which is to encourage them to use new teaching and teaching methods and abandon traditional ones.
- Using an educational method based on the McCarthy model to develop physical abilities and other skills in fencing.
- Urging teachers and trainers to use this educational strategy for other groups and stages, as well as in other skills and games.

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