

The McCarthy model learning styles and their relevance to creative thinking in the sport of fencing for students

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The following question was posed to outline the research problem: What is the ideal method (according to McCarthy's model) for learning the fencing game that is strongly connected with creative thinking? The first chapter included the research method and its field procedures, where the researchers relied on the descriptive approach, and the sample of the research was divided into a sample preparation for a scale of creative thinking, a pilot experiment sample, and a main application sample. The researcher's put in a considerable amount of creative thought in order to to produce the project in its ultimate shape, as well as statistical measures. The third chapter intended to describe the outcomes of the McCarthy model's learning patterns and their relevance to creative thinking in the fencing game. Concerning the study's findings and suggestions (students differ in their learning processes and their capacity to comprehend new experiences such as the fencing game), Students' learning styles are related to the creative thinking of the fencing game in numerous ways. Meanwhile the suggestians (Adopting the learning styles and characteristics of each student in this style to teach new experiences and build educational curricula for each group).

Key words:

Thinking creatively: (Abdul-Sattar Damad. 2002, 186) It is the process through which the mind organizes its experiences to solve a problem and understands the link between two or more issues.

Styles of learning: (Wissam Salah. 2018, 9) is the learner's preferred method of perceiving and processing information.

McCarthy's model: (Omar Al-Douri. 2012, 41) one of the educational models that comprises of procedural phases based on reflective observation, concept crystallization, active experimentation, and tangible material experiences.

Chapter 1

1. Introducing the research

1.1 Introduction and importance of the research

The fencing game is one of the individual games that have met with great prosperity among the international sports circles because it carries a historical dimension that extends for thousands of years and since the inception of man until our present time. Through the researchers modest experience in fencing they have noticed a link between the learning styles

concept considering it is the process of attaining information in a way that suits all students learning styles and allow them to practice and creatively apply learning materials during each class and between their creative thinking, which enhances their creativity towards the game of fencing and progress in learning. The educational method is more directly tied to the creative thinking of the fencing game, so that they can grow and enhance this style in order to serve the greatest number of students in learning the fencing game.

1.2 research issues

McCarthy's approach divides the multitude and diversity of students' skills to learn the fencing game, as well as their strong relationship with learning styles, into four basic patterns (imaginative, analytical, intuitive, and dynamic). It is these patterns that qualify them for broader and faster learning, as every student can be included under one of these patterns, and this raises a question, which will be the main essence of this research:

1- What is the preferred style (according to McCarthy's model) for learning fencing that is highly related with creative thinking?

The logical steps that the researchers will take in this research will allow them to answer this question.

1.3 research objectives

1- Detecting learning patterns for students in the fencing game using McCarthy's approach.

2- Creating a scale of creative thinking for pupils in the fencing game

3- Recognizing the relationship between McCarthy learning styles and creative thinking in the fencing game.

Chapter 2

2. Methodology and field techniques for research

2.1 Methodology of Research

To meet the nature of the research and to complete the requirements for collecting data and attaining the aims and hypotheses set for it, the researchers relied on a descriptive approach with correlative relations during this study.

2.2 The community and the research sample

The research community was comprised from the students of the Faculty of Physical Education and Sports Sciences for the first stage University of Babylon for the academic year 2021-2022, with 115 male and female students divided into four divisions (A-B-C-E) with different numbers in each division and according to the college's organization. The girls' division was excluded from this study because the difference in thinking and dominance between the two hemispheres of the brain, a physiological concept that explains the difference between males and females, will be a distraction to the results, given that this study is based on the variable of creative thinking and classification with learning patterns on

brain sovereignty and according to McCarthy's classification model. As for the research sample, it was chosen at random using the simple lottery method to determine the sample of numbers, the sample of the exploratory experiment, and the sample of the main experiment, and it was divided in this manner to include the greatest number of students and people, as shown in Table (1) below.

Table (1): Shows the distribution of people and their numbers on the research samples

N	division	Total number	Numerical sample	Survey Experimental sample	Main experiment sample
1	B	32	8	4	19
2	C	30	8	3	18
3	D	28	9	3	18
sum		90	25	10	55

2.3 The research sample's homogeneity and equivalence

The research group's homogeneity was based on the results of admission to the University of Babil/College of Physical Education and Sports Sciences, which included (height, mass, age, intellectual safety), which occurred during the period of tests for applicants for admission to the college, which the applicants and those accepted for this year underwent according to scientific standards. These factors are correct since no student is admitted to college unless they meet anthropometric standards and are supervised by professors who specialize in sports medicine and sports physiology. In terms of equivalence, it is not regarded necessary in this study because learning patterns differ from person to person, which will alter the research sample's replies on their creative thinking scale.

2.4 Data gathering methods, techniques, and instruments employed in the research

2.4.1 Data collecting methods

(Arabic and foreign sources and references, observation, interviews, international information network)

2.4.2 Research devices and tools

(Computer, papers + pens, learning pattern scale, creative thinking scale, hand calculator 1, CASIO type timer)

2.5 Choosing the two search tools:

2.5.1 Choosing learning styles scale

Following an examination of the majority of the scientific sources and references, it was discovered that learning patterns are stable, as McCarthy stated, because this scale assesses four types of patterns and does not require preparation. If the scale consists of 18 items and the possibilities for each item are (A-B), as the answer from segments 1-9 if it came with the alternative (A), the individual will be within the Imaginary learning style. If the individual

answers paragraphs 1-9 and chooses Alternative (B), the individual is in the analytical pattern; however, if the individual answers paragraphs 10-18 within Alternative (A), the individual is in the intuitive learning pattern; however, if the choice is made, Alternative (B) the individual is in the dynamic mode.

2.5.2 Creating a scale for creative thinking

2.5.3 Creating the creative thinking scale's segments

Although the researcher prepared the creative thinking scale for the Iraqi sports environment (Zahra Jamil Saleh, 2006), the researchers were obligated to prepare this scale for the current research sample, who are first-year students at the College of Physical Education and Sports Sciences at the University of Babil for the academic year 2021-2022 for the fencing game, as the two researchers amended the scale segments to meet the characteristics of the research sample based on the fencing game. On the scale declarations, the scale contained three fields, one for each of (the original segments, the modified segments, the amendment that depends on the opinions expressed by experts or corrections regarding the modified segments)

2.5.3.1 Determining the validity of the creative thinking scale's segments

To accomplish this procedure, the researchers distributed the questionnaire form that they had prepared, which included the original segments of the creative thinking scale, as well as the segments that were modified based on the research sample and the type of sporting activity (fencing game), as well as fields for those who agreed on the validity of the box amendment and those who did not, and another field. It includes the possibility of experts amending the original or modified segments, and after collecting expert opinions about the validity of the scale's segments, the researcher collected expert and specialist opinions and used the (Chi-square) equation to determine the differences between those who agreed and those who did not agree, as 55 segments out of 74 segments were kept, and the segments (5-8-11-13-14-17-20-25-26-27-29-42-45-47-54-62-68-69-70) were omitted.

At the degree of freedom (1) and the level of significance (0.05), the tabular value was (3.84).

2.5.3.2 Forming the instructions for the creative thinking scale

After making adjustments to the scale based on expert opinions, the scale was returned to its original form, where the researchers prepared instructions for the scale's segments in the same manner, as well as instructions based on the thinking scale that explain to students how to answer the segments, as the instructions were simple, clear, understandable, and compatible with the students' abilities. To ensure the validity of the answer to the segments objectively, a form that shows the answer to the segments was placed, but the name of the scale was not disclosed. The scale had three dimensions, and the solution to the segments was made with a scale consisting of (agree, neutral, and disagree).

2.5.3.3 The creative thinking scale's questionnaire experiment

The creative thinking scale was administered to a sample of (10) students from the questionnaire experiment sample in order to ensure the clarity of the instructions and the

suitability of the segments to the research sample, as well as to avoid difficulties and obstacles that the researcher might encounter during the scale's application. After about (15-18) minutes, the scale is ready to be applied to the sample numbers for statistical analysis.

2.5.3.4 Applying the scale to a sample of numbers for statistical analysis

After the scale was completed in terms of segments and instructions, the researchers began applying the scale, which numbered (55) segments, on the sample of numbers of (25) students representing the sample numbers on Sunday 10/12/2021 at half past ten a.m. for the purpose of completing its preparation and conducting the statistical analysis.

2-5-3-5 statistically analyzing the creative thinking scale

The scale was adjusted according to the correction key after collecting the creative thinking test, which was administered to a sample of (25) students, and the students' answers were unloaded into an Excel bar for statistical analysis of the scale. Indication of the scale's ability to discriminate between the study sample's answers in terms of clarifying the higher and lower scores for the scale's questions.

First: Distinguishing feature:

The two peripheral groups approach was utilized to detect the distinguishing ability of the creative thinking scale. Using this manner, the researchers validated the measure using a preliminary sample of (25) students.

The following steps were taken to calculate distinguishing ability:

- Arrange the scores of the pupils from highest to lowest.
- Determining the percentage of (33%) of the forms that received higher degrees and (33%) of the forms that received lesser degrees, while ignoring the percentage of (33%) of the middle ones, because a percentage of (33%) provides a fair size and differentiation, and Each peripheral group consisted of (12) pupils on this basis.
- The researchers then used the statistical test (t) for independent samples to determine the differences between the two groups, and it was discovered that the test used in the research has a high distinguishing ability between the upper and lower groups because the value of (sig) is less than (0.05), indicating the differentiation of the two parties, with the exception of the two segments (40, 41), which fell with the ability to distinguish.

Second: the internal consistency coefficient: the link between the segment degree and the total degree of the scale.

To determine the extent of the homogeneity of the items in their measurement of the measured behavioral phenomenon, the researchers used the simple correlation equation (Pearson) to extract the correlation between the degree of each item and the total score, for all 25 students in the sample, using the statistical bag at the degree of freedom (33) and the level of significance (0,05) and the tabular value of (0,361). All the segments were homogeneous with the total score of the scale, which indicates that all of them were going in the same direction as a whole, and thus the number of the scale segments became 53 segments.

2.6 the scale's scientific foundation

First, considering the scale's honesty:

Honesty is an important indicator and fundamental notion in measuring tools, and the researchers relied on two sorts of honesty, namely apparent honesty and the validity of the hypothetical construction (distinguishing power).

1- Apparent honesty: The apparent honesty of the test was calculated by presenting it to experts and specialists, and all of the scale's axes and phrases were approved by the majority of the arbitrators based on the statistical significance of the chi-square between those who agreed and those who disagreed.

2- Validity of the hypothetical configuration: the validity of the hypothetical configuration was determined by calculating the distinguishing power of the scale using the two extreme groups approach. The researchers, after the process of collecting the data of (25) students, and arranging them in ascending order from the lowest degree to the highest degree, and then choosing (33%) of the lower scores, which amounted to (12) students as well', in order to demonstrate the test's ability to identify between students (the sample numbers), where (Kelly) indicates that (33%) of the upper groups and (33%) of the lower groups The best percentage by which we acquire the highest coefficients of excellence is the least." (Marwan Abdel-Majid, p. 52, 2000) The researchers found substantial differences in the creative thinking exam between the top and lower groups, indicating that the test may distinguish between the two groups.

Second - Scale stability: The researchers used two ways to calculate the stability of the scale:

1- Method of half-segmentation:

The split-half approach is one of the most commonly used methods in educational and psychological research to determine the reliability coefficient since it takes just one application of the test and is economical in terms of effort and time.

This method is based on dividing the test whose stability is to be determined into two equal halves once it has been applied to one group, and there are numerous ways to split the test. The first half of the test may be utilized instead of the second half, or odd-numbered questions may be substituted for even-numbered questions. (Abdel-Rahman, Saad, 1983, p. 203) As the scale items were separated into categories, the researchers relied on the data of a basic sample of (25) students. The correlation coefficient between the total scores of the two halves of the items of the scale consisting of (53) segments was extracted using Pearson method and statistical software (spss), where the extracted correlation coefficient means stability for half of the test only, and in order to obtain the stability of the entire test the Spearman-Brown equation was applied. It appeared that the test has a high degree of stability with regard to the scale of creative thinking, and it was discovered that the values of the reliability coefficient are high markers of the test's reliability.

2- cronbach's method:

The two researchers obtained this form of stability by relying on the data of the members of the preparatory sample, a total of (25) student, as the value of the stability coefficient obtained in this manner for the scale was (0.83), which is a good stability coefficient.

As a result, the scale comprises 53 segments and is ready to be applied to the primary research population.

2.7 The primary research experimental methodologies

After completing the appropriate steps to identify the Creative Thinking Scale segments, the primary experiment was conducted on Sunday 12/19/2021 with students from the College of Physical Education and Sports Sciences at Babil University for the academic year 2011-21. Following their response, participants were given a scale of creative thinking in the fencing game, which the researchers had constructed. The two scales were then collected and applied with the assistance of assistant staff members.¹

Chapter 3

3. Displaying and discussing the results

3.1 displaying the results

3.1.1 Displaying the Learning Styles Scale results

The researchers extracted the numbers of students and classified learning styles using McCarthy's model after collecting and unpacking the findings of assessing learning styles, as shown in Table (2)

Table (2): Using the McCarthy model of learning styles, to prepare the students for the main sample.

The division	Total numbers	learning styles			
		Imaginative	Analytical	Intuitive	Dynamic
b	19	6	5	5	4
C	18	5	6	3	4
D	18	6	3	3	5
sum	55	17	14	11	13

3.1.3 Presenting the results of learning styles and the creative thinking scale

To find the correlation between learning styles according to the McCarthy model and creative thinking in the fencing game, the researchers isolated the results of the creative thinking scale for each group of learning styles groups and found the Pearson simple correlation coefficient for them separately for each style, where the results were summarized in the table (3).

¹1- Muhammad Adnan, Master's Student, University of Babil, College of Physical Education.

2- Muslim Abdullah, Master's Student, University of Babil, College of Physical Education.

Table (3): displaying the findings from the study on the relationship between learning styles and creative thinking in the fencing game.

N	Learning styles	Creative thinking		Pearson coefficient	sig	function
		s	y			
1	Imaginative	84	0.13	0.88	0.001	significant
2	Analytical	91	0.1	0.74	0.000	significant
3	Intuitive	87	0.08	0.79	0.012	significant
4	Dynamic	90	0.18	0.81	0.000	significant

At the level of significance (0.05)

3.2 Discussing the results

The results presented in the previous two tables (2, 3) show that the main sample of the research did not have an equal number of students in the prevailing learning styles, which is what McCarthy emphasized in her theory, where she emphasized that individuals are not equal or homogeneous in learning styles because each individual has a custom pattern through which he can perceive and learn. Table (3) demonstrates that the disparity between learning patterns and their relationship to creative thinking in the fencing game is likewise unequal, with the results indicating that the imagined pattern had the highest correlation on the creative thinking scale. They have the potential to learn through imagination, yet they are imaginative and may connect fresh experiences with new educational experiences. The dynamic pattern scored second in the table based on the value of association, and the owners of this pattern are able to use fresh experiences in scenarios other than the ones on which it was founded. The intuitive pattern came in third place, and owners of this pattern can practically encounter the new experience or talent, where this becomes a habit. The experience of cognitive structure, and lastly, the analytical style, in which the learner offers facts and information to himself in order to satisfy his demands to know what he does not know from the new experience.

Chapter 4

4. Conclusions and Recommendations

4.1 conclusions:

The researchers came to the following conclusions based on their research: (students differ in their learning styles and ability to understand new experiences such as the fencing game, students differ in their responses to the fencing game's creative thinking scale, students' learning styles have a different association with the fencing game's creative thinking).

4.2 Recommendations:

(Using the creative thinking scale to reveal the extent of understanding and awareness of new experiences, other activities, and other games, the possibility of applying the creative thinking scale prepared by the researchers in other research for the fencing game).

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