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The effect of McCarthy's model on interactive thinking and learning basic skills in backstroke swimming for students

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Abstract

The aim of this document is to identify the preparation of the interactive thinking scale for first-stage college students specializing in sports sciences and physical education / Al-Mustaqbal University and to determine the impact of the McCarthy model on interactive thinking and learning backstroke for students and to show the preference in the impact of a curriculum for education with the McCarthy model as well as the method followed by the teacher in interactive thinking and learning backstroke for students. Due to the experimental method's applicability and the nature of the problem, the researcher employed two groups the control and the experimental with pre- and post-measurements. The first-stage students at Al-Mustaqbal University's College of Physical Education and Sports Sciences for the academic year 2023–2024 comprised the research community, with a total of 164 students. as they were selected randomly using the simple lottery method to determine (numbers sample) and (exploratory experiment sample) and (main experiment sample), as the failed (5) students and the game practitioners (2) students and teachers (3) students were excluded. Among the most significant findings made by the investigator is that the McCarthy model has greatly enhanced the development of interactive thinking, a noticeable improvement in interactive thinking and learning backstroke for students, in addition to the students' ability to find appropriate solutions to educational situations, because the McCarthy model developed the ability to think interactively, link, infer and perceive, which helped to retain a greater amount of information related to the fundamental abilities of backstroke swimming, Furthermore to its contribution to the speed of learning of the experimental group in a shorter period than the method followed for the control group.

Keywords: McCarthy's model, backstroke swimming, learning basic skills

Introduction

Recent years have witnessed a major and comprehensive transformation and development in the fields of science and general education. This development has contributed significantly to developing the prevailing view of learning, as it has been taken out of its traditional framework that focused on the function of the instructor and considered him the only positive role in this procedure by presenting and delivering all the information and knowledge related to the learning material to the student. The student's role in it was limited to listening and memorization, as the student was the repository for storing this knowledge and sciences. The process of preparing the student has become one of the important issues due to the role he plays in society. The student's learning of new models and strategies is an urgent necessity imposed by successive scientific changes and transformations. This requires the use of multiple teaching methods in modern trends in physical education in teaching methods according to the real needs of developing the student's performance and raising his cognitive and skill level. The learning process was characterized by developing the student and developing his abilities and capabilities, as well as developing the relationship between the teacher and the student in terms of dividing the duties they perform based on the principle that the learning process accompanies the acquisition process. Therefore, educational methods and means have diversified, including the use of models The approved educational model that has proven its effectiveness in achieving the goals, including the McCarthy model, which has become an important pillar during the educational process, as it meets the needs of the instructor and the student in several areas, the most important of which is giving

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the student a role in thinking, contemplating and imagining to achieve the desired learning.

Through this model, we can clearly address an important process that occurs in the human brain, which is interactive thinking. Interactive thinking is the way to solve strategic problems. It helps analyze the surrounding environment, innovate new ideas, and present a future vision based on understanding the roots of the present from the past and using ideas to determine the work plan.

Accordingly, developing interactive thinking skills in swimming requires many tools to suit the nature of this subject, including the student and the teacher, in addition to the institutions that encourage interactive thinking and are keen to develop its skills to be more prepared to face unexpected and unlikely scenarios.

Hence, the importance of research through using McCarthy's model and knowing its effect on interactive thinking and learning backstroke performance for students of the Faculty Al-Mustaqbal University's department of physical education and sports sciences, as it is important to advance in order to stay up with the field's developments and its approaches in order to bring the greatest number of students up to the required level of learning with the development in these fields, which helps to spread this sport more widely.

Research problem

The researcher noticed through the thoughts of several swimming instructors in universities and through repeated interviews more than once before and during teaching, and since the researcher is the director of a swimming academy, the existence of difficulties and neglect in learning backstroke among students because it is a swimming that includes new concepts for them that they have not been familiar with before, in addition to the difference in concepts between it and freestyle swimming, the necessity of using educational models and strategies that work to support thinking in terms of receiving information, understanding it and processing it in a way that is compatible with students' learning styles, so the researcher decided to use an educational approach with McCarthy's model to learn backstroke, so he wanted to teach it in swimming and measure its effect on interactive thinking and learning backstroke for students.

According to the previous presentation, the current research's issue is attempting to address the following query: (Does the influence of a curriculum based on the McCarthy model for education have an impact on interactive thinking and learning backstroke swimming for students)?

Research objective

1. Preparing an interactive thinking scale for first-stage students at Al-Mustaqbal University's Faculty of Physical Education and Sports Sciences.

2. Identifying the impact of McCarthy's model on interactive thinking and learning backstroke swimming for pupils.

Research hypotheses: The curriculum has an effect on education with McCarthy's model on interactive thinking and learning backstroke swimming for students.

Research fields

1. **Human field:** First-year students enrolled in Al-Mustaqbal University's Faculty of Physical Education and Sports Sciences for the 2023–2024 academic year.
2. **Date range:** March 12, 2023, to May 2, 2024.

Al-Mustaqbal University and Marina City Indoor Pool are the spatial fields.

Search terms

1. **McCarthy's model:** It is an educational model based on McCarthy's four-step classification of learning styles and consists of four steps; each step consists of two stages. The steps are motivation and stimulating students' motivation through reflective observation, crystallizing the concept, developing the concept, active experimental training, and applying tangible physical experiences (Iman Al-Tabban. 2014) [7].
2. **Interactive thinking:** It is the propensity of the person to behave wisely in the face of a difficulty, even if he is unable to find the explanation or solution in his cognitive structures. This is because problems can sometimes take the shape of puzzles, ambiguous situations, or perplexing situations. Interactive thinking is the process of making sure and using wise decisions when one is unsure about the right response or course of action. (Alaa Hassan Hatem. 2022) [4].

Research methodology and field procedures

Research Methodology

The type of issue the researcher is attempting to solve is what determines the method he chooses for the purpose of obtaining the results. Therefore, the researcher adopted the experimental method, which is considered "the closest method to solving problems in a scientific way and the most valid approach" (Sami Muhammad Malham. 2000) [17]. By implementing the experimental design for the experimental design of the study is displayed in Table (1) along with the control and experimental groups, random selection, and pre- and post-test results.

Table 1: The experimental design of the two research samples is displayed in Table 1.

Groups	Pre-test	Trial and error treatment	Post-test
Trial and error	Interactive Thinking Horizontal Back Float	McCarthy Model	Interactive Thinking Horizontal Back Float
Control	Back float slip test Two Legs Stroke Float 20m Backstroke	Teaching Mechanism	Gliding from Back Float Two Legs Stroke Float 20m Backstroke

Community and sample research

Research community: According to Abbas, Muhammad Khalil, and others (2009) [1], the term "research community" refers to all individuals or persons who are the topic of the

study problem and to whom the research conclusions can be applied generally. The first-year students of Al-Mustaqbal University's College of Physical Education and Sports

Sciences for the academic year 2023–2024, totaling 164 individuals, comprised the research community.

Research sample

The sample means that it is a member of the community being studied, selected in compliance with certain guidelines to ensure community representation. Correctly (Sabry Azzam. 2006) ^[15], so the researcher must, when choosing his research sample, be representative of the community and

honestly express the phenomena that the study is trying to understand. It was chosen randomly using the simple lottery method to determine (the numbers sample), (the exploratory experiment sample), and (the main experiment sample), as shown in Table (2) below, as the failed students (5) and the game practitioners (2) students and the teachers (3) students were excluded. The research sample was divided according to McCarthy's scale of prevailing learning styles, and Table (2) demonstrates that.

Table 2: Shows the distribution of the research community and its numbers on the research samples is shown

No.	Sample	Section	Total number	Sample number	Percentage
1	Control	C	46	24	52.17%
2	Experimental	B	45	24	53.33%
3	Exploratory	D	49	10	20.40%
4	Sample Preparation of the scale	D	49	39	79.59%

Homogeneity of the research sample

Verifying the homogeneity of the research sample in the variables related to the physical measurements height, mass, and chronological age as well as calculating the skewness

coefficient as indicated in Table (3) allowed the researcher to control the variables that might have an impact on the accuracy of the research results and attribute any differences in the effect solely to the independent variable.

Table 3: The homogeneity of the research sample in terms of the physical characteristics (Length, mass, and chronological age) is displayed in Table 3.

Variables	Measuring unit	Mean	Median	Std. Deviations	Skewness
Length	Cm	175.2	175	12.787	0.897
Mass	Kg	69.725	69	7.799	0.546
Age	Year	20.725	20	2.322	0.538

Table (3) demonstrates that the more homogenous the sample, the closer the skewness coefficient value is to zero, and in the case of normal distribution, it is between (± 1), i.e. the normal distribution is moderate for them.

the two research groups in the variables related to the study. The experiment and control groups' individuals were found to be equal, which is a good indicator that the two groups are equal in the research variables and, consequently, it became evident that the two groups are equal to conduct the study. This indicates that there are no significant differences between the two groups, which confirms the equivalency of the two groups in all pre-tests, as indicated in Table (4).

Equivalence of the two research groups: Before beginning to implement the educational units on the main research sample, the researcher conducted equivalency for

Table 4: The equivalency process between the two groups (Control and experimental) in the variables under study is displayed in Table (4)

Variables	Groups	Arithmetic mean	Debit card	T value determined	Sig. Level	Sort Sig
Interactive Thinking	Experimental	33.2000	2.17781	1.289	0.232	Non Sig.
	Control	34.1333	1.76743			
Horizontal Back Float	Experimental	1.887	0.221	.1240	0.098	Non Sig.
	Control	1.889	0.532			
Back float slip test	Experimental	1.5333	.516400	.7270	0.341	Non Sig.
	Control	1.6667	.487950			
Two-legged Float test	Experimental	1.5333	.516400	.3570	0.831	Non Sig.
	Control	1.6000	.507090			
20 m Backstroke Performance Evaluation	Experimental	1.4667	.516400	1.663	0.0921	Non Sig.
	Control	1.6000	.507090			

Means, devices and tools used in the research

1. Arabic and international references and sources
2. Two Chinese-made medical scales.
3. Measuring tape.
4. (20) Float boards
5. (20) swimming goggles
6. (2) Fox whistle.
7. 10 laser discs.
8. Dell laptop.
9. (3) Sony digital cameras.
10. Educational posters (stickers) to illustrate the technical and skill performance of the skills used in the research, size 2*3 m, number (2).

Field research procedures

Steps for preparing the interactive thinking scale

The researcher adopted the scale (Alaa Hassan Hatem. 2022) ^[4] consisting of (30) paragraphs as a guide for preparing its paragraphs, and It was used on the study sample in order to identify their interactive thinking, and the researcher conducted the scientific foundations of the interactive thinking scale, Appendix No. (1).

Determining the tests used in the research

Skill tests (Assessing the level of skill performance) (Osama Kamel Rateb. 1997) ^[14]: The researcher reviewed earlier research on backstroke swimming performance

assessments as well as specialized scientific literature. A panel of five judges assessed the backstroke swimming skill performance level of the participants in the two study groups (Control and experimental), and the score was established using the test scale for both the pre- and post-measurements. The average of the judges' ratings for each student was then determined by the researcher, as shown in the tests below:

Horizontal Back Float test

- **Goal of the exam:** Assess the candidate's capacity for buoy horizontally (control the body's adjustment).
- **Test conditions:** The test subject starts in a standing position in the water in the horizontal Float test so that his body is completely straight.
- **Tools used:** Stopwatch, recording papers and pens.
- **Test recording:** The test measurement begins from the time the learner is in the horizontal position until he is in the inclined position.

Backward float slip test

- **Purpose of the test:** To teach floating and sliding on the back.
- **Performance specifications:** Upon hearing the signal, the learner clasps his hands high behind his head and looks towards the edge of the pool. The learner bends his knees together and places his hands on the water, then pushes his legs together and lets the body move easily, noting that he should look forward towards the edge of the pool and not up.
- **Tools used:** Stopwatch, recording papers, and pens.
- **Test recording:** Calculating the longest distance.

Two-legged stroke float test

- **Goal of the examination:** To teach the two-legged strokes.
- **Efficiency specifications:** Upon hearing the signal, the student extends one arm forward and holds the edge of the pool with the other arm. The student puts his head in the water first, then places his other hand on the hand extended on the water. The student pushes the legs together and lets the body slide on the water easily and smoothly. The student must focus on keeping his gaze forward. The student then begins to move the legs in an alternating manner, with the movement from the hip joint and noting the striking of the water with the insteps of the legs and making sure that the heel of the feet breaks the water and not the entire foot.
- **Tools used:** Stopwatch, recording papers, and pens.
- **Recording:** Calculating the longest distance.

Backstroke 20m

- **Purpose of the test:** Measure the distance for learners.
- **Test conditions:** Learners swim the distance specified in the test without stopping.
- **Test recording:** The time the learners covered the specified distance is noted in the test.

Exploratory experiment

The exploratory experiment aims to verify the findings of the larger experiment with a smaller one. We choose a small sample of participants for the experiment from the original community, the vocabulary or test type, and the test type. This is carried out in the same settings as the primary

experiment, and its significance lies in identifying the challenges the researcher will encounter so that they may be avoided in the primary experiment. (Wajih Mahjoub. 1988)^[18]. In order to identify potential challenges and roadblocks, the researcher carried out an exploratory experiment in the Marina City swimming pool for the academic year 2024–2023. The sample of the research community consisted of ten students who were chosen at random from among the members of the research community on Sunday, March 12, 2023.

Pre-tests

With the assistance of the assistant work team, the pre-tests were administered on the research sample (The primary experiment sample) to perform the tests once all the equipment and measurements related to conducting the tests, as follows:

- On Tuesday, May 12, 2023, at nine in the morning, the study sample members (control and experimental groups) took the interactive thinking scale pre-tests. At the Marina City swimming pool contracted with the Al-Mustaqbal University.
- The pre-tests to measure the research tests were carried out for the research sample participants (control and experimental groups) on Wednesday, June 12, 2023, at 10:00 a.m. at the Marina City indoor swimming pool.

Applying the educational units according to the McCarthy model

The educational curriculum Appendix (2) was created by the researcher after reviewing the curriculum items specifically related to swimming that were designated for first-stage students at the Faculty of Physical Education and Sports Sciences - Al-Mustaqbal University. The educational units were created using the McCarthy model, and the researcher created unique educational units for the members of the experimental group while the control group used the teacher's method. On Sunday, October 12, 2023, the curriculum was implemented for the students in the experimental research group. At the indoor pool at Marina City, starting on Wednesday, January 31, 2024, and continuing for eight weeks, at a rate of one instructional unit every week for a duration of ninety minutes. The subject instructor used the model as the components of the lesson plan were separated into the preliminary section: (15 minutes), during which the following was covered: (5 minutes) After a 10-minute general and customized warm-up, the instructor starts the 20-minute instructional portion of the main session, applying the first dimension (Theoretical) perception, which is First, in two steps (Reflective observation): At this point, In order to get the students' attention and inspire them with questions, the instructor splits them into four groups of six pupils each. Next, the instructor poses a question to the class, to which the students are then free to respond in whatever way they see fit. After reviewing the group members' responses, he gives the students a suitable amount of time to consider their thoughts and assists them in determining their accuracy. Concerning the second phase (which involves crystallizing the notion or perfect performance): The instructor plays a DVD and goes over some of the strokes and techniques used in backstroke swimming. in addition to the connection made by playing scenarios and other methods. Students' models are then displayed as a video model so that viewers may see

the perfect performance. The instructor then spends the next sixty minutes processing the second dimension, or practical, in the applied portion of the main course. The third step, known as active experimentation, is used by the instructor: At this point, the tasks from the instructional unit are expected of the students in order to assess their performance. After that, the instructor fixes the mistakes by providing performance comments, The educational unit's exercises are then carried out by the teacher in the proper order to allow the students to reflect, try new things, and arrange their thoughts. Afterward, the students are asked to complete the exercises once more. As for the fourth stage, known as "tangible material experiences," the students are asked to complete the performance exercises through a variety of play scenarios in order to discover what new experiences they have reached. The performance is done independently of the teacher in order to assess the students' creativity. Finally, the teacher provides feedback to the students for uncharted territory, investigation, and experience-based learning, given that this portion of the lesson plan was split into the following major sections: Seventy minutes of instructional content: (30 minutes): This component comprised the model's two phases, which are: Sorting the thoughts in the learner's possession takes up the first 15 minutes. The second 15 minutes are dedicated to: (Stage of information processing) the useful element: (40 minutes): This feature encompassed the remaining phases of the model. The third phase, which lasted for 20 minutes, was information exploration. The fourth stage (Social context stage) lasts for 20 minutes. We then spend the next five minutes on the last segment. A few leisure activities are played in this area before the tools are gathered and put back where they belong. Appendix No. (2) and Table No. (5) Display the program's time distribution.

Table 5: The time distribution of the researcher's educational program is displayed in Table (5).

Paragraph	Time Distribution of the Program
Number of weeks	8 weeks
Number of units per week	2 units
Total number of units	16 units
Unit time	90 minutes
Total time	1440 minutes
Number of groups	6
Number of students in group	4

Post-tests

On Sunday and Monday, corresponding to 4-5/2/2024, the researcher performed post-tests for the experimental and control groups for the variables under investigation after finishing the implementation of the instructional units in accordance with the McCarthy model on the experimental group. To assess the amount of development made by the students in the experimental and control groups, the tests were administered to both groups at ten o'clock in the morning in the Marina City indoor pool, directly under the researcher's observation. In order to acquire precise findings, the researcher was eager to set up the identical parameters as the pre-tests, including the time, location, equipment, and instruments employed.

Results and Discussion

Presenting, evaluating, and debating the findings from the two study groups' pre and post-tests

Presentation, evaluation, and discussion of the experimental group's pre and post-test findings for the variables being investigated

Table 6: The experimental group's pre- and post-test arithmetic means, standard deviations, and (T) value are displayed in Table (6).

Variables	Tests	Arithmetic mean	Standard deviation	T value calculated	Level Sig	Type Sig
Interactive Thinking	Pre	33.2000	2.17781	9.564	0.001	Sig.
	Post	77.4571	2.62524			
Horizontal Back Float	Pre	1.887	0.221	5.722	0.000	Sig.
	Post	8.6700	1.07766			
Back float slip test	Pre	1.5333	.516400	3.770	0.000	Sig.
	Post	8.0336	1.09722			
Two-legged Float test	Pre	1.5333	.516400	3.577	0.023	Sig.
	Post	6.5977	0.54111			
20 m Backstroke Performance Evaluation	Pre	1.4667	.516400	3.755	0.002	Sig.
	Post	8.2377	0.69866			

It is clear from Table (6) The results of the skills tests under investigation show that there are significant differences between the pre- and post-tests, with the post-test receiving a higher score than the pre-test. This is supported by the significance level value of less than 0.05, which also confirms the statistical differences that are statistically significant in favor of the post-test. Table (6) presents the results, which indicate a substantial change in the variables under research between the pre- and post-test results favoring the post-test for the experimental group. (Interactive thinking), horizontal Float on the back, sliding from Float on the back, Float of two legs, and performance evaluation of swimming on the back for a distance of 20 meters. The researcher attributes were notable variations from the beneficial effects of the McCarthy model, which the researcher implemented for the experimental group by

organizing, sequencing, and arranging the instructional materials in accordance with the model's two dimensions in its four stages, as each dimension One of these aspects was a series of phases, protocols, and actions that the instructor or student follows to fulfill its particular objectives. Educating using this paradigm also included dividing the students into (4) groups, each group (6) students, to grab their interest and inspire them in the impact of interactive thinking on them, by asking questions then after that, the instructor poses a question, has the class respond, and goes over the group responses. This keeps the lecture lively and engaging while also removing students' boredom and providing them with adequate space. to think critically and collaborate both individually and as a group to address issues and find solutions, and this is in line with what was verified by (Muhammad Saad Zaghoul and others. 2001) [13] "that the

way that contemporary educational tools are used and the variety of possibilities they offer can boost the effectiveness of the teaching strategy employed, as well as the students' enthusiasm and positive attitude toward the lesson. This will encourage students to learn and gain experiences more effectively because the method makes the lesson more engaging, which in turn reflects on the students in the form of varied and accumulated experiences. Additionally, by crystallizing the notion of ideal performance and making the students active participants in the educational process, the McCarthy model of instruction made the experimental group of students the center of attention. which is in the first dimension the second stage of applying the McCarthy model, As the instructor plays a video that he reviews some movements and skills in backstroke swimming in addition to the relationship that links the skills through play situations and others, as "this model includes two paths, the first represents the perception of experience and the second represents the processing of experience information, and these two paths represent the process of learning and development using the McCarthy model designed to enable learners to get closer to resolving the issues they encounter and succeeding in the learning process. (Wissam Salah Abdul Hussein and others. 2018) [19]. Also, the feedback that was given to learners in the McCarthy model, which contributed greatly to developing the level According to

Lamia Hassan Al-Diwan and Hussein Farhan Al-Sheikh Ali (2016) [8], when a student performs motor skills, the teacher "often uses words that are an incentive for better performance or to modify the performance." This is a motivating factor that increases the students' drive towards performance and gives them freedom in the practical application of activities, which makes them feel independent. This improves the students' self-confidence and self-image because it increases their motivation, which in turn makes them more daring and challenging to meet the requirements of skill performance and subsequently provide a better level of performance. (Abdullah Hassan Al-Moussawi. 2005) [2] verified: "A fundamental element that facilitates learning is showing the learner love, acceptance, and encouragement as well as placing him at the center of activities and the educational process, and respecting his opinions and abilities." Based on the aforementioned, we deduce that all of these elements and processes contributed to the experimental group students' post-test level development, indicating that the McCarthy model positively influences students' interactive thinking and backstroke swimming learning. As a result, the study's goal is met.

Presenting, evaluating, and debating the control group's pre and post-test findings for the variables under investigation

Table 7: The control group's pre- and post-test arithmetic means, standard deviations, and (T) value are displayed in Table (7)

Variables	Tests	Arithmetic mean	Standard deviation	T value calculated	Level Sig	Type Sig
Interactive Thinking	Pre	34.1333	1.76743	3.998	0.003	Sig
	Post	65.8544	2.05244			
Horizontal Back Float	Pre	1.889	0.532	3.032	0.022	Sig
	Post	7.3000	1.24555			
Back float slip test	Pre	1.6667	.487950	4.922	0.02	Sig
	Post	5.0000	1.21111			
Two-legged Float test	Pre	1.6000	.507090	4.673	0.00	Sig
	Post	3.1211	1.021			
20 m Backstroke Performance Evaluation	Pre	1.6000	.507090	6.932	0.00	Sig
	Post	4.6222	1.003			

It is clear from Table (7) The results of the skills tests under investigation show that there are significant differences between the pre- and post-tests, with the post-test receiving a higher score than the pre-test. This is supported by the significance level value of less than 0.05, which also confirms the statistical differences that are statistically significant in favor of the post-test. Table (7) presents the findings, which indicate a substantial difference in favor of the post-test for the variables under investigation (Interactive thinking) between the pre- and post-tests of the control group. horizontal performance assessment, floating on one's back, sliding from floating on one's back, floating on two legs, then swimming twenty meters in the backstroke. The researcher attributes the growth of the students in the control group to the instructional strategy used by the person in charge of the learning process. This included the use of all the resources and tools at his disposal during the educational units, as well as the provision of theoretical information, explanations, illustrative presentations, and practical applications of the educational

material. Additionally, the researcher applied special exercises to develop the variables under study. This is in line with the remarks made by (Mohsen Ali Naseef. 2000) [12] that "giving organized and scientific exercises has a great impact on developing performance" and completing all of the assignments during the units, as practice and repetition also help to achieve a fair amount of development. In the post-test, the students in the control group showed less development than those in the experimental group. This makes sense because, regardless of the approach taken, the teacher's method of teaching the material positively contributes to the students' level development, even if the teacher is the one who uses it more than the students. In other words, the teacher provides the students with concepts and topics that are ready to use; they just need to apply them rather than interpret and analyze them.

Presenting, evaluating, and debating the experimental and control groups' post-test results

Table 8: The computed (T) value, standard deviations, arithmetic means, and statistical significance for the post-test results for the experimental and control groups are displayed in Table (8)

Variables	Groups	Arithmetic mean	Standard deviation	T value calculated	Level Sig	Type Sig
Interactive Thinking	Experimental	77.4571	2.62524	15.521	0.000	Sig.
	Control	65.8544	2.05244			
Horizontal Back Float	Experimental	8.6700	1.07766	13.793	0.000	Sig.
	Control	7.3000	1.24555			
Back float slip test	Experimental	8.0336	1.09722	8.380	0.000	Sig.
	Control	5.0000	1.21111			
Two-legged Float test	Experimental	6.5977	0.54111	12.360	0.000	Sig.
	Control	3.1211	1.021			
20 m Backstroke Performance Evaluation	Experimental	8.2377	0.69866	11.543	0.000	Sig.
	Control	4.6222	1.003			

Table (8) shows Thus, for the skills tests under investigation, there are significant changes between the pre- and post-tests, with the post-test showing a bigger degree of freedom (22) and a computed (t) value greater than the tabular value (2.546) at a significance level of 0.05. All of the (sig) values are less than (0.05), indicating that the differences are statistically significant and favor the experimental group. It was discovered that there were variances and discrepancies in the post-test arithmetic means and standard deviations between the experimental group's pupils, who used the McCarthy model, and the control group, who employed the teacher's method. The outcomes were displayed in Table (8). That the post-test results for the experimental and control groups differed significantly, with the experimental group performing better on the variables under investigation. This is because the model significantly invested in the process of organizing thinking and looking for ideas and solutions, which helped the experimental group make progress in the post-tests. It also helped that practice, repetition, and the use of different teaching techniques led to the emergence of sound and successive performance. In this sense, the approach helped the experimental group's students develop more interactive thinking, which was demonstrated by giving them the chance to communicate with one another, solve problems related to the skills they were studying, and share their findings. In order for students at this stage of study to reach ideas that can be implemented independently, they must be given the opportunity to practice interactive intellectual practice of game situations and critique and analyze them. This will allow them to express their ideas with complete freedom in a scientific, studied manner that is aware of the various educational situations. The students' enthusiasm while applying the exercises for the two skills indicated that they were developing a sense of confidence and responsibility. (Ban Adnan. 2007) [6]. Students can develop themselves and gain more experience in exploring a subject, idea, or skill and comprehending the connections between its components when they are given the chance to learn, express their opinions, and demonstrate their abilities. This is because the Format strategy (McCarthy's model) in student learning is based on the sequential steps that allow the student to show what he has learned from new experience. (Mahmoud Dawood Salman Al-Rubaie. 2008) [10]. The two dimensions of the model and its four stages, which require considering the answers and solutions provided by the students, are also credited by the researcher as the reason for the experimental group's superiority in the post-test of interactive thinking and learning the skills studied for learning backstroke swimming. This was corroborated by (Marwan Abdul Majeed Ibrahim. 2001) [11]

"Knowing the movement and how it is performed is essential to learning and skill development, particularly when this idea is connected to the cerebral side that emerges from the elucidation and explanation of motor abilities." The curriculum gave consideration to the interactive thinking process because it is one of the thinking patterns that needs to be addressed and practiced by students. It helps them gain insight into topics and works in a methodical and dependable way to accomplish particular goals. It mostly relies on the teacher's expertise, experiences, and information, which they then connect to earlier knowledge and use to solve problems using terms from the planned curriculum.

The investigator thinks that the explanation for the experimental group's pupils' greater performance compared to the control group students at this level is that the prepared educational units were more positive than the educational units Regarding the group under control, as they allowed the teacher to explain the material in more detail and accuracy and link it to the students' previous information and experiences. His role in these units also became that of a guide, mentor, and leader of the educational process, as well as the positive environment that these units provided for the students through the two dimensions of the model and its four stages, which made the lesson enjoyable and more lively, in addition to practicing exercises practically and in a diverse and renewed manner, which led to learning the skill performance of backstroke swimming, as well as containing these prepared educational units on the optimal use of feedback and correcting errors continuously and immediately through the stages of the model, as both (Mahmoud Al-Rubaie, Saeed Amin. 2010) [9] believe that it is one of the means used To guarantee the accomplishment of the best possible objectives and objectives, which the educational process seeks to achieve on an ongoing basis to help the learner stabilize the performance if it is going in the right direction or modify it if it needs to be modified. This has a positive impact on refining, refining and polishing performance, and the instructional materials created in accordance with the McCarthy prototype are more positive than the mechanism the topic instructor comes next; this is due to the comprehensiveness of these units in terms of following a logical sequence in presenting the topics and what is based on it in terms of activities and events that are appropriate for the swimming subject and the level of students' awareness, and organizing the content of that subject and selecting the teaching methods and techniques and means that the teacher used are what made Compared to the pupils in the control group, the experimental group's students were more cooperative, driven, and ready to learn. The researcher also thinks that there is a positive factor that

contributed to the experimental group's superiority over the control group, and that factor is the favorable environment the teacher created in these prepared units by implementing the model's four stages and dimensions, since these units made use of new educational techniques that they had never used before, as well as the variety of instructional activities for skills, which increased the excitement, interest, and enjoyment of these units for the students. This encouraged interaction and gave them the motivation to apply the material with all of their zeal, desire, and drive, as demonstrated by (Saeed Ghani Nouri. 2010) [16] that "The most appropriate way to create an environment that is exciting, enjoyable, and full of excitement for the student is to use a variety of exercises, methods, and styles when teaching sports skills. This helps the student pick up sports movements and activities quickly."

As the adoption of tangible experiences in the fourth and final stage in applying the model enabled them to create accurate representations of skill performance by performing exercises specific to performance through some game situations to see what experiences they reached New and so contributed to the provision of the opportunity for students to modify their previous concepts and acquire new concepts, this is what (Alaa Hassan Hatem. 2022) [4] confirmed that linking the student's previous information with what is new from information results in a significant achievement of the goals, students arrive to the classroom with a variety of prior information and misunderstandings, and the most significant influence aspect is what the students already know, since learning is the consequence of the interaction between what he learned and his present thoughts, and thus confirms that the McCarthy model has a positive effect on interactive thinking and learning backstroke swimming for students, and thus the goals of the study are achieved.

Conclusions and Recommendations

Conclusions

The researcher came at the following conclusions based on the data collected:

1. The application of McCarthy's model in education has led to a significant improvement in interactive thinking and learning backstroke for students.
2. McCarthy's model has greatly enhanced the development of interactive thinking and backstroke swimming among students.
3. The students' ability to find appropriate solutions to educational situations, because McCarthy's model developed the ability to think interactively, link, infer and perceive, which helped to retain a greater quantity of data pertaining to the fundamental abilities of backstroke swimming.
4. The use of McCarthy's model contributed to the speed of learning of the experimental group in a shorter period than the method used for the control group.

Recommendations

According to the conclusions that proved the effectiveness of using McCarthy's model, the researcher recommends:

1. Adopting the interactive thinking scale as a scale to detect interactive thinking for similar samples that have the same specifications as the current sample.
2. Applying and adopting McCarthy's model in teaching swimming and other subjects.

3. Organizing the curriculum vocabulary based on the McCarthy model's stages and the established educational objectives.
4. Paying attention to interactive thinking in educational units and curricula because of its important role in revealing the level of interactive thinking among educational groups.
5. Conducting new research and studies on using the McCarthy model in teaching games and other skills or for comparison with other educational models and methods.

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Appendix (1) Interactive Thinking Scale

No.	Paragraphs	Always	Sometimes	Never
1.	I enjoy thinking with my group members, so I listen and interact with their ideas when learning the smash or blocking skill			
2.	I stick to my idea in solving the educational problem about the smash and blocking skills even if one of my group members comes up with a better solution than mine			
3.	As a group leader, I strive to communicate with its members to solve the problems that the teacher raises about the skill			
4.	I use positive, interactive phrases with my colleagues such as (what do you think, let's play together, I agree with you)			
5.	If I encounter a problem related to skills, I seek help from my colleagues in solving it and accept their collective opinions			
6.	I cooperate and interact with my colleagues and present different ideas to achieve a better understanding of the lesson topic, especially when learning a classroom skill in volleyball			
7.	I enjoy teamwork and sharing ideas within the group when practicing the smash and blocking skills			
8.	I help the group in tasks that require joint cooperation by presenting different ideas related to the smash and blocking skill			
9.	I like to work in a group and interact more positively Working alone when performing skills			
10.	I share ideas with my colleagues that may be useful when we face difficulties in learning the skill of crushing or the skill of blocking			
11.	I participate in the conversation if I sit with a group of my colleagues about the skill of crushing			
12.	I enjoy individual activities, assignments and exercises more than group activities			
13.	I like to think alone to reach the correct solution when I face a problem in the learning process or when performing my skills of crushing and blocking			
14.	I prefer to sit and work alone and not share with others when learning the skill of crushing			
15.	I participate positively in scientific discussions that revolve around the correct performance in the class			
16.	I refuse to share with others in changing my idea about the educational material related to my skills of crushing and blocking			
17.	I complete educational tasks and exercises related to the skill better when I work alone			
18.	I gain new information about the skills when I discuss with my colleagues			
19.	I feel uncomfortable when I share with my colleagues work related to the study material and the required skills			
20.	I share my ideas and information with the group I belong to in the class			
21.	I choose the appropriate response to solve problems With my colleagues about the skills learned			
22.	I effectively address educational problems and propose possible solutions within the group by presenting all ideas.			
23.	I cooperate with my social environment with my colleagues to perform the skills learned			
24.	I accept others when I disagree with them in thinking about the learned material			
25.	I have the ability to express my ideas and discuss them with others			
26.	I find it difficult to organize my ideas for optimal performance if I am alone			
27.	I ask my colleagues about the information that I do not understand from the scientific lecture so that the idea becomes clear to me and I share it with everyone			
28.	I prefer to discuss with my colleagues topics related to study skills that serve the learning process			
29.	I prefer group performance of exercises more than performing alone			
30.	I learn well through interaction and sharing ideas with my colleagues about skills			

Appendix No. (2)

A model for an educational unit using the McCarthy model

Today: Sunday

Time: 120

Date: 1/28/2024

Devices and tools: Float boards - Swimming goggles - Stopwatch
Educational lesson: Fifteen

Objective: Students learn to coordinate between the kicks of the legs and arms and breathe on the back in the correct manner.

No.	Unit Components	Time	Performance (Activity)	Behavioral objectives	Formations
1	Theoretical dimension Crystallization of the concept or ideal performance	15	Attracting students' attention and preparing their minds by watching and reading instructions and topics (reflective observation) Watching pictures of exercises to coordinate between the kicks of the legs and arms and breathing on the back. Asking questions after which the teacher asks the students to answer a question Showing a video that shows exercises to coordinate between the kicks of the legs and arms	The student should listen to the instructions and topics while watching the ideal performance. The student should get used to paying attention while watching the pictures and special exercises, coordinating the kicks of the legs and arms, and breathing on the back.	xxxxxxx xx xx •
2	Practical dimension Educational aspect	15 15	Sorting the ideas in the learner's possession Land warm-up: Running around the pool. (Standing. Arms high interlocked) Running in place. Water warm-up: Walking in the water while exchanging movements of pushing the water back with the arms. Raising the leg and knee high in front. Information processing stage	The student should prepare physically by practicing some physical exercises. The student should be able to perform the exercises correctly. The exercises should help raise the level of physical fitness of the students.	xxxxxxx xxxxxxx •
3	Application aspect (processing) Active experimentation	20 20	Stage of searching for skill information: Achieve coordination between the kicks of the legs, arms and breathing through the following pictures and exercises Performing the kicks of the legs, moving one arm continuously, the other arm next to the body with the shoulder rotating up and down, apart. Repeat the previous exercise with the right arm. Kicks of the legs, raising the right arm vertically, count 1, behind, count 2, 3, side, count 4, the left arm next to the body. Performing swimming, performing the breathing process once each arm cycle Performing swimming, performing the breathing process once each arm cycle. Community context stage	The student should link the technical steps to coordinate between the kicks of the legs, arms and breathing after the teacher explains them during the class, with an error rate not exceeding 15%.	xxxx xxxx ↑ • xxxx xxxx xx xx
4	Final	5	Minutes to relax - Calming exercises - Taking absence - Greetings of departure	The student should perform the exit salute after the end of the educational lesson.	xxxxxxx •