

## THE EFFECT OF AN EDUCATIONAL PROGRAM ACCORDING TO THE SHAMAK MODEL IN DEVELOPING STUDENTS' COGNITIVE ACHIEVEMENT AND OFFENSIVE HANDBALL SKILLS

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### Abstract

The use of modern educational technologies exemplified by the Schimek model is one of the modern models in learning, which works to stimulate the senses of the learner, which is reflected in the skill performance well, and through which the scientific content can be presented in a clear and straightforward manner, which may contribute to the development of the learner's abilities and skills and thus increase his cognitive achievement. In an effort to impact the cognitive achievement of the most essential individual defensive skills in handball, it is crucial to conduct research based on the development of a curriculum in accordance with the Shamak model's techniques. Students and through the experience of the researchers of the game of handball and its follow-up to most educational units, and because we have experience in this field as teachers of this subject, they discovered that most curricula do not carry with them important strategies for processing information, and this is what causes weakness in learning some aspects of knowledge and offensive and defensive skills, especially individual, which affects On the difficulty of employing these individuals. As a result, it impacts the learner's degree and learning tendencies, so researchers turned to a curriculum based on the Shamak model in cognitive achievement to address this issue. Preparing an educational curriculum based on the Shammak model for the cognitive achievement of the most important individual defence skills in handball for students, and identifying the differences between the pre- and post-tests of the control and experimental groups

in the cognitive acquisition of the most important individual defence skills in handball for students. The researchers utilised an experimental design with pre- and post-tests. The research community consisted of (90) students from the College of Physical Education and Sports Sciences / Third Stage / Misan University for the academic year (2021-2022), and (40) students from each of the two divisions. The most notable finding is that the educational curriculum based on the Shamak model had a beneficial influence on the experimental sample's learning of individual defensive movements. The educational curriculum based on the Shammak model had a positive effect on the cognitive achievement of the experimental research sample, while the most important recommendations were to emphasise the importance and role of individual defensive moves in the overall educational and training process for learning and improving the level of performance of players and students for these defensive moves. Teachers and trainers should identify the most significant individual defensive responsibilities, train them gradually according to their relevance to the defender, and administer frequent examinations to determine the level of defensive performance of these motions.

**Keywords:** Educational Program, Shamak Model Cognitive Achievement, Offensive Handball.

### **Introduction**

One of the conditions for the qualitative development of the learning and teaching process is the use of applied teaching models in the educational unit, as the vital pillars in the education and teaching sector need to develop the educational system for educational and teaching methods, strategies, and models and how to apply their steps sequentially, organised, and sequentially so that students can benefit from them ideas and develop their knowledge and concepts when teaching (Gläser-Zikuda, Hagenauer & Stephan, 2020). This requires the use of modern educational models that rise to the level of the labor market in schools and universities to be learning outputs that ensure society in all respects, that the main task in the use of modern educational models is to address the largest number of variables of the educational process, which helps the teacher to design effective teaching experiences and this in turn contributes to raising the level of students' ideas and employing their creative skill according to an integrated framework (Almaiah, Alamri & Al-Rahmi, 2019). Due to its educational, physical, and mental benefits, handball is one of the most popular team sports in the world.

Moreover, the level of performance of its players and the results of its matches in defence and attack are continuously improving, which adds new physical, technical, and tactical requirements that should be incorporated into the game's educational curricula (Karomatovich, 2022). The skills of playing in the game of handball, especially defensive skills, are the basis of competition that determines the level of players or teams and their arrangement, and it also forms the basis of learning and training that the teacher or coach seeks to create adaptations that will perform their skills at the highest level; therefore, consideration must be given to the foundations of designing educational exercises as their achievement is appropriate for special situations (Al Ghurairy & Hussein, 2022; Musa & Menezes, 2022). Schmeik and a group of his colleagues have designed an educational model that they benefited from crystallising from the ideas contained in the learning cycle, which consists of four sequential methods in sequence (method of in-depth processing, method of linking previous concepts, method of retaining information, method of systematic study), which is one of the most essential things that the learner must learn, and these strategies are the means by which the learner acquires this knowledge (Schimek, Salafia & Stastny, 2021). The Schmeik model is one of the modern learning models that aims to stimulate the learner's senses, which is mirrored in the learner's skill performance and through which it can be assessed (Schimek, 2020). Providing scientific knowledge in a clear and accessible manner, which may help to enhancing the capacities and skills of the learner and so increasing his cognitive success, thus the relevance of research in the development of a curriculum according to the Shammak model. An effort to impact the cognitive attainment of handball's most essential individual defensive skills.

### **The Problem of Study**

Researchers who studied the game of handball and then followed up with most of the educational units, as well as our own experience as teachers of the subject, found that most curricula lacked important strategies for processing information; this led to students having difficulty learning certain facets of knowledge and offensive and defensive skills, particularly at the individual level, which influences the difficulty of employing the theoretical side to serve the practical side, and thus the learner's degree and tendencies towards learning, therefore the researchers resorted to solving this problem by adopting a pedagogical approach based on the Schimek model to knowledge acquisition. The cornerstones of individual handball defensive technique.

### **The Objectives of the Study**

1. Preparing an educational curriculum according to the Schimek model in the cognitive acquisition of the most important individual defense skills in handball for students.

2. Identify the differences between the pre- and post-tests of the control and experimental groups in the cognitive achievement of the most important individual defense skills in handball for students.
3. Identify the preference of the control and experimental groups in the post-tests in the cognitive achievement of the most important individual defense skills in handball for students.

### **The Hypotheses of the Study**

1. The educational curriculum according to the Schimek model has a positive effectiveness in the cognitive acquisition of the most important individual defense skills in handball for students between pre- and post-tests and for the benefit of post-tests.
2. The educational curriculum according to the Schimek model has preference in the cognitive acquisition of the most important individual defense skills in handball for students in the post-tests between the experimental and control groups and in favor of the experimental group in the post-tests.

### **Research Areas:**

**Human Area:** Students of the third stage, Faculty of Physical Education and Sports Sciences, University of Misan, for the academic year 2021-2022.

**Temporal Area:** 19/2/2022 to 23/4/2022.

**Spatial Areas:** Closed hall in the College of Physical Education and Sports Sciences at the University of Misan.

### **Methodology**

#### **Research Methodology and Field Procedures**

#### **Research Methodology**

The researchers used the experimental method using pre- and post-tests, and the experimental approach represents the most honest approach to solve many scientific problems in a practical and theoretical manner (Marsden & Torgerson, 2012).

#### **Research Sample and Community**

The research community was selected are the students of the Faculty of Physical Education and Sports Sciences / Third Stage / Misan University for the academic year (2021-2022), numbering (90) students, distributed over four classes, as two classes were selected as a sample by simple random method (lottery) to represent experimental and control group, and the number of (40) students. (6) students were eliminated due to lack of parity with the remainder of the sample, and the sample reached the first exploratory experiment with (5) students, the second exploratory

experiment with (6) students, and the main experiment with (28) students by (14) students per group. As displayed in Table (1).

**Table 1:** Showing the details of the research community

Research Community	Research Sample	Sample Exploratory Experience	Sample Main Experiment	Excluded
90	40	10	40	2

### Homogeneity of the Sample Members

In order to achieve homogeneity among the members of the study sample, the researchers measured the variables (height, weight, and age) represented by the research sample as shown in Table (2).

**Table 2:** Shows the homogeneity of the research sample

Variables	Unit of Measurement	M	SD	Torsion Coefficient	Size Sample
Length	CM	21.06	2.05	0.934	40
Weight	Kg	70	3.04	0.819	
Age	Year	174	6.16	0.723	

#### 1. Means of collecting information

##### a. Research Tools:

1. Arab and English references and sources.
2. Testing and measurement.
3. Personal interviews.
4. Form for recording the results of measurements and tests.
5. Assistant team.

##### b. Devices and Tools Used in Research

1. Electronic watch number (2).
2. Computer (laptop) type HP Number (1).
3. Hand calculator Dell type Number (1).
4. Scale device for measuring weight.
5. Video camera type (Canon) Number (2).
6. Leather tape measure.
7. Legal handball goals Number (2).
8. Legal handballs number (15).
9. Colored adhesive tape.
10. Data dump forms.
11. CDs.
12. whistles (2).

13. handballs (8).

### Field Research Procedures

❖ Form to determine the most important individual defensive skills in handball. For the purpose of identifying the most important individual defensive skills of handball players in the youth category, and after reviewing the sources, scientific references, and personal interviews conducted with a number of handball experts, the researchers designed a questionnaire to collect the opinions of handball experts and specialists, and then distributed the questionnaire to them. It was collected and unloaded in order to select the most significant defensive skills if the relative relevance of each was determined, and table (3) displays the defensive skills adopted by the researchers and which obtained (70%) or more.

**Table 3:** The individual defense skills nominated for study and their relative importance according to the selection of experts and specialists.

Skills	Relative Importance
Defensive moves	%80
Passing of Defensive	%100
Defensive Coverage	%100
Block	%90
Stop to attack	%65

### Tests Individual defensive moves

1. Defensive move on two occasions.
2. Short-range defensive moves.
3. Various defensive moves.
4. Individual defensive Block by high jump.

### Cognitive Achievement Test

The researchers utilised the cognitive accomplishment scale developed by the researcher (Thuraya Jawaid Muhain) from the University of Karbala for the sport of handball. The test consists of (30) items, and the correct response is to select one of three options. The researcher relied on the levels of learning mentioned in the classification (Bloom) in the cognitive field, which is one of the most prevalent classifications of educational goals because it contains a wide range of behavioural patterns of goals that are anticipated by the majority of educational programmes and systems. Whereas the cognitive accomplishment scale domains consisted of questions in the following areas: (game history, motor skills, strategies, game law).

### **Exploratory Experience**

Experimental research requires conducting exploratory experiments to ensure the conditions and scientific quality of the tests as well as the validity of the tests and exercises that will be used in the research, and the exploratory experiment is defined as a practical exercise that identifies the researcher's strengths and weaknesses.

### **First Day Exploratory Experience**

On Monday, 21/2/2022, researchers at Misan University's College of Physical Education and Sports Sciences conducted an exploratory experiment on five third-year students. The goal of the experiment was to:

1. Introducing students to the Schimek model's instructional techniques (organisation strategy, categorization strategy, analysis strategy, application strategy, information retention strategy, information evaluation strategy, and preparedness strategy), which will be applied to curriculum learning.
2. Understanding and identifying the challenges that may arise during the application of the experiment, and then devising solutions for them.
3. Attempting to determine the level of students' understanding and comprehension of how to employ approaches and overcome obstacles.

### **Second Day Exploratory Experience**

On Tuesday, February 22, 2022, at ten o'clock in the morning, five students participated in an exploratory cognitive achievement test in the College of Physical Education and Sports Sciences at Misan University.

### **Main Experience**

a. **Pre-Tests:** Wednesday, February 23, 2022, at ten o'clock in the morning, researchers administered a cognitive accomplishment exam to third-year students of the College of Physical Education and Sports Sciences at Misan University. On Thursday, February 24, 2022, at 10:30 a.m. on the handball court at Misan University's Faculty of Physical Education and Sports Sciences, the researchers test (skills and individual defensive moves) of third-year students in the department.

b. **Preparing the educational curriculum according to the Shamak model:**

1. **Regulation Strategy:** In this strategy, the researchers fostered an environment conducive to student interaction with the subject and curriculum teacher, and introduced them to the concept of information processing and the skills required for it, as well as the significance of this concept in enhancing the acquisition of the most essential skills for individual defensive movements in handball.

2. **Classification Strategy:** In this strategy, researchers instructed students on how to classify information for learned skills. This strategy is significant because it

serves as the foundation for learning each skill separately, as it enables the student to identify the skill and distinguish between important and less important information related to that skill.

**3. Analysis Strategy:** In this strategy, researchers teach students how to analyse information by dividing the content into its elements and the sequence and sequence of ideas. Additionally, students are taught the skill of analysis by analysing skill performance and identifying the most common errors made when performing the types of skills used in research.

**4. Application Strategy:** The researchers taught students how to apply the correct information, principles, and technical execution of the skill in real-world scenarios.

**5. Information Retention and Recollection Strategy:** Researchers taught students how to keep, remember, and retrieve knowledge as necessary.

**6. Information Evaluation and Critique Strategy:** In this technique, the researchers instructed students on how to effectively evaluate the skill's performance.

**7. Study and Readiness Strategy:** In this technique, the researcher instructed students on how to study and prepare by re-teaching, re-training, and re-preparing them for skills they had already acquired in prior lectures.

**c. Implementation of the educational curriculum according to the Shamak model:** After evaluating a large number of sources, studies, and scientific references, the researchers relied on techniques derived from the Schimek scale to process information, and based on Bloom's cognitive classification, a curriculum was developed using the Schimek model. The notion of information processing is comprised of seven interconnected substrategies derived from the Schimek scale for information processing with its four axes. Together, these substrategies constitute the concept of information processing. Wherein the researchers developed educational units for the educational curriculum of the experimental group, which includes seven strategies and fits the subject and sample of research and is distributed over (10) educational units, with the order of the units based on previous theses and prior research.

The following are the most significant observations regarding the experimental group's educational curriculum:

**First:** The educational curriculum was implemented in accordance with the Schimek model on 27/2/2022 and at a rate of two instruction units per week for the experimental group; for the purpose of adjusting this variable, two instruction units per week were implemented for the control group; and the application of the educational curriculum for the experimental group concluded on 3/3/2022. And implemented the prepared educational curriculum (specialist teaching) in handball, and the units of the control group and experimental group were identical in time, location, and number of units.

**Secondly:** The total amount of time spent on educational units was (90 minutes), which was divided as follows:

1. **Preparatory Section:** The total time is (20 minutes) distributed on: general warm-up and private warm-up.

2. **Main Section:** The total time is (60 minutes) distributed on: the theoretical (educational) section and the applied (practical) section.

3. **Concluding Section:** Its total time is (10 minutes).

The researchers structured the educational curriculum in accordance with the Shamak model's tactics and the nature of the studied skills.

d. **Post- Tests:** After completing the application of the educational curriculum to the experimental group, which consists of (10) educational units, the researchers conducted the post-tests on Sunday and Monday, on 6/3/2022, the skill side was tested, and on 7/3/2022, the cognitive achievement tests were conducted in handball on all members of the basic experiment sample, the two groups (experimental and control), under the same conditions and specifications as the pre-measurement.

e. **Statistical Methods:** The researchers utilised statistical methods from the (SPSS) section of the statistical portfolio for social sciences (23).

## Results

### 1. Presentation of the results of the differences between the pre- and post-test of cognitive achievement and the most important defensive skills and for the control group and analysis.

**Table 4:** Shows the difference between the pre- and post-tests of the control group members of the research variables (cognitive achievement and the most important individual defense skills in handball).

Variables	Unit of Measurement	Pre-test		Post-test		T	Sig
		M	SD	M	SD		
Defensive moves	Time	14.02	1.09	11.70	1.13	15.73	0.00
Passing of Defensive	Degree	4.99	0.407	7.14	0.770	5.13	0.00
Defensive Coverage	Degree	15.39	0.712	17.57	1.15	16,86	0,00
Block	Degree	7.41	0.414	10	0.960	7.85	0.02
Stop to attack	Degree	16.5	2.40	19	1.61	18.46	0.00

### 2. Presentation of the results of the differences between the pre- and post-test of cognitive achievement and the most important defensive skills and for the experimental group and analysis

**Table 5:** Shows the difference between the pre- and post-tests of the experimental group members of the research variables (cognitive achievement and the most important individual defense skills in handball).

Variables	Unit of Measurement	Pre-test		Post-test		T	Sig
		M	SD	M	SD		
Defensive moves	Time	16.48	1.02	11.63	1.23	17.50	0.00
Passing of Defensive	Degree	5.01	0.437	8.28	0.913	6.54	0.00
Defensive Coverage	Degree	15.38	0.450	21.57	1.94	16.95	0,00
Block	Degree	7.31	0.626	14.28	0.994	7.93	0.00
Stop to attack	Degree	17.01	3	23.14	2.03	20.04	0.00

**3. Presenting the results of the differences between the dimensional tests of cognitive achievement and the most important defense skills and the research group (control and experimental) and analyzing them.**

**Table 6:** Shows the difference between the post-tests of the group members (control and experimental) for the research variables (cognitive achievement and the most important individual defense skills in handball).

Variables	Unit of Measurement	Control group		Experimental group		T	Sig
		M	SD	M	SD		
Defensive moves	Time	11.70	1.13	11.63	1.23	12.83	0.00
Passing of Defensive	Degree	7.14	0.770	8.28	0.913	8.11	0.00
Defensive Coverage	Degree	17.57	1.15	21.57	1.94	18.71	0,00
Block	Degree	10	0.960	14.28	0.994	11.04	0.00
Stop to attack	Degree	19	1.61	23.14	2.03	20.7 2	0.00

In tables (4,5,6), we present the results of skill assessments used to evaluate individual defensive manoeuvres (Defensive moves, Passing of Defensive, Defensive Coverage, Block, and Stop to attack), for the control groups and experimental pre- and post-tests, and the emergence of moral differences between them and in favour of post-tests, and the researchers attribute these moral differences between the pre- and post-tests to the quality of skill exercises used in the educational curriculum according to the Shamak model, which included educational units designed to teach students in handball individual defensive movements. As the educational curriculum was based on a studied scientific foundation in the educational units, where the educational curriculum was based on the programmed Schimek model, and the appropriate load, gradation, and observation of individual differences were used for students, as well as the use of optimal repetitions and appropriate breaks for performance, the educational curriculum was constructed on a scientific basis (Bessa et al., 2019; Schimek et al., 2022). In addition, the continuity of the research sample, their regularity and

response to the exercises of the educational units over the course of the curriculum designed by the researchers, as well as the accompanying multiple repetitions of skill exercises for defensive movements, led to the learning of the experimental group's individual defensive skill performance (Andersen, Ottesen & Thing, 2019; Lindsey, 2020). Breed and Spittle (2020) and Dania and Harvey (2020) observes in the stage of learning development, Coaches and teachers emphasise the repetition of the execution of the fundamental abilities of each game so that their implementation becomes automatic, and this is reflected in its development. Also noted Renshaw and Chow (2019) and Wilk et al., (2020) that repetition is the basis for learning, and determining the number of times the performance of the movement is important, it depends to a large extent on the coach's acumen and experience in determining the optimal number of repetitions suitable for each age group. The researchers also attribute the moral differences that appeared in the pre test and post tests to the philosophy and nature of the exercises designed according to the Schimek model, which contributed to a greater mastery of individual defence skills than the control group that uses the traditional method designed by the subject teacher. Consequently, the speed of learning led to these individual defensive moves in them, as well as the specialisation of the exercises, their quality, their different style, and their economy with effort toward mastery of the skills under varying conditions and environments of play during the performance resembling play. Exercises, as noted by Buckthorpe (2019), are useful to a certain extent, but in order to maximise learning, a coach and player must also consider the conditions of learning and efficient techniques. This is not to say that the amount of training is unimportant, but that it is only effective if combined with interference with the training conditions to achieve the desired result. Researchers agree that motor learning represents the internal changes of the learner in response to the stimuli of specialised educational exercises, which can be inferred from it through the manifestations of movement and learning output that can be measured; however, this process is not directly observable to the naked eye. This is confirmed by Ali and Kasim (2022), who states that motor learning cannot be measured directly because the amount of learning is determined by the success rate of skill performance. Furthermore, since learning takes place in the central nervous system, motor skill is acquired by storing a motor programme that is pruned through repetitions and feedback. It also Tomporowski and Pesce (2019) suggests that the motor learning output reflects the conclusion or ultimate product of the educational process, which is a learner or player with a certain level of knowledge and motor abilities. As shown by Chuckravanen et al., (2019), success in the motor performance of skills is dependent on the degree of mental acuity, the extent of the potential and efficiency of the specific exercise, and the player's capacity to locate, receive, and utilise all movement-related information. The researchers believe that the development of their experimental group in individual defensive movements is the result of a positive

psychological factor that contributed positively to handball students for the applications of educational units utilising this model, namely the effective practise of exercises, their diversity, conditions similar to game play, increasing qualitative repetitions, gradation in level and composition in skill performance, which resulted in a rise in students' drive to learn their own defensive manoeuvres, as well as their willingness and commitment to undertake exercises during educational units, based on their advancement in those skills. Frey, Fisher and Smith (2019), concurred with that the self-motivation of the emerging player stems from within so that he enjoys attending every training dose and his absence is viewed as a loss of something precious, important, and dear to him, the motivation to continue practising stems from the nature of the activity that he enjoyed and the performance that he enjoys, which represents his new experience. Therefore, the numerous exercises would result in the awakening of a youthful spirit of enthusiasm and enhance their capacity to learn (Makulov, 2022). As for the cognitive scale, we observe that there are significant differences between the post-tests of the control and experimental groups, with the experimental group outperforming the control group. This is because, regardless of differences in skill performance, the control group is incapable of absorbing and analysing a large number of cases if it is not accompanied by a sufficient amount of information about the skill to be learned. As practical knowledge is the cornerstone of the learner's preparation and development, we find that the Schimek model led to a clear cognitive development of the experimental group as a result of the type of educational units and the precise information they contain about the performance of the skills under study, this style of learning reduces the disparity between students' skills, allowing the remaining students sufficient time to learn and guaranteeing that they all attain their objectives. This is supported by Asvio (2022), who explains that cognitive achievement is the number of educational goals attained by the learner in a specific study subject or the amount of information and skills acquired as a result of education.

### **Conclusions**

The researcher reached the following conclusions based on the results collected from the field experiment and the use of proper statistical methods in their description and inference.

1. The educational curriculum according to the Shamak model had a positive effect on teaching individual defensive movements among the experimental research sample.
2. The educational curriculum according to the Shamak model had a positive effect on increasing the level of cognitive achievement among the experimental research sample.

3. The development in the education of individual defensive movements among the clear research sample through the clear difference of the results of the post-tests of the experimental group confirms the effectiveness of the independent variable and experimental control.
4. The duration of the independent variable represented by the number of educational units for exercises according to the Shamak model was appropriate in creating adaptations that express the extent of development in the speed of learning individual defensive movements in the research sample.

### Recommendations

1. Improving the level of performance of players and students for these defensive moves by emphasising the significance and relevance of individual defensive moves in the overall learning and training process.
2. Teachers and trainers should identify the most significant individual defensive responsibilities, train them gradually according to their relevance to the defender, and administer frequent examinations to determine the level of defensive performance of these motions.
3. Attention and emphasis on individual defensive moves in order to demonstrate a high correlation between team results and the amount of goals scored against them by mastering them via specialised training.
4. Conducting additional study utilising the Shamak paradigm in various team and individual sports.

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