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The effect of cognitive modelling strategy supported by hypermedia in learning some soccer skills for second grade students

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Abstract

There are many different educational techniques, and one of these contemporary tactics is the cognitive modelling strategy, which is an instructional strategy to impart knowledge to learners. As a result of the levels of student empowerment when used gradually from the lower level to the higher level, a new model was used that integrates educational technology with learning and teaching. This is because there is nothing better than educational technology that contains various means to attract the learner's attention while they are learning sports skills and activities. A recent study in methods of teaching physical education found that teaching football does not keep up with modernity and development in the field of education, so modern methods have been introduced. Hypermedia is an educational software environment that helps to link information elements in a non-linear way. To address the problem and the aim of the research is to design and apply educational units according to the strategy of cognitive modelling supported by hypermedia and to identify its impact on learning some skills in football where the experimental approach was used, and the research sample was determined in a systematic random way as it consisted of students of the second year average, and the experimental design was adopted for two groups are interrelated, and field research was conducted to determine football skills, and the curriculum was implemented for the experimental and control groups using cognitive modelling supported by hypermedia, and previous studies were used to prepare the educational curriculum, and the statistical (SPSS) was used. We advise paying attention to the strategy of cognitive modelling as an educational strategy in physical education lessons and emphasizing the benefit from the advantages of hyper-media programs in facilitating the process of learning motor skills, especially in the early stages of learning, emphasizing the provision of appropriate materials. Students are encouraged to contribute to creativity and innovation in a way that suits their experiences and skills by using media to learn some football skills. Conducting additional study in physical education to determine the effects of the cognitive modelling approach on creating experimental variables in the field.

Keywords: Educational technology, learning, emphasizing

1. Introduction

1.1 Significance of the Present Study

Learning is not a process of acquiring information, but it is a process in which the learner builds information and skill. This contributes to increasing his/her ability.

To organize the student to be more active because he/she analyses the tasks presented to him/her by the teacher and always plans for the appropriate type of objectives for his/her learning and achieving those objectives that are previously planned for. The distinguishing characteristic of this learning is the integration of students and their adoption of self-objectives and learning resulting from behaviour. One of the modern cognitive strategies in the field of education is the cognitive modelling strategy, which is a learning strategy to deliver knowledge to learners in which the teacher presents to learners his ways of processing information aloud while performing the procedures involved in order to learn a task And focus on highlighting the teacher's ways of thinking about learning and working to put the learners themselves in the teacher's frame of reference. This is on the one hand, and on the other hand, the learner is always attracted towards the things that attract his/her attention. Of course, there is no better education technology, with various means through which it can attract the learner while learning sports skills and activities so that it becomes more effective during teaching. Watching these means completely eliminates boredom that

Learners feel while learning the skills of sports activities in the lessons of physical education. Therefore, the effect of the means will be better when the learner him/herself contributes to the learning process that open up new horizons of knowledge for him/her, help him/her gain scientific and organized thinking, and increase his/her motivation towards the practice of motor activities.

Football is one of the games that depend on mastering basic skills, especially at an early age, to enable students to master these skills. Therefore, the researcher decided to use a new model that works on integrating technology with education and teaching because of its levels of student empowerment when it is used gradually from the lowest level to the high level using technology. There is no requirement to use one or two levels or all of them except for the behavioural objectives of the content of the lesson. Students study many subjects, spend their school day feeling heavy and burdened by the amount of information they receive, which may limit their motivation towards learning and their desire to study. In light of the various technologies and the tremendous technological development, educational experts are looking for alternative means to textbooks and traditional classroom classes in order for students to obtain information and receive knowledge in an attractive way that helps them catch up with the world. Here, hypermedia emerges as an attractive interactive means. It means the interdependence of informational elements with each other in a non-linear manner that helps enrich the student's information and increase his/her motivation. Through this technology, data turns into information, and information into knowledge. Hypermedia is an educational software environment that helps to link information elements in a non-linear form, which helps the learner to browse and flip between its elements, and control its presentation to interact with it in order to obtain its educational objectives and meet the learner's needs. It helps increase the learner's motivation through immediate feedback. It also increases his/her ability to control the learning process.

Hence, the significance of the present study can be demonstrated through the theoretical side, as it is a recent study in the field of methods of teaching physical education by transferring the advantages of self-regulated education according to the strategy of cognitive modelling) from theoretical sciences to applied sciences, as well as its importance to the scientific side by facilitating the process of skill education of football by employing the Hypermedia program by presenting the skill and its educational and technical steps in more than one output before students.

1.2 Problem Statement

Football is one of the items of the physical education lesson within the curriculum of the secondary school guide prepared by the General Directorate of Curricula in the Iraqi Ministry of Education. The successive rapid developments in various branches of knowledge require specialists in the field of education and psychology to reconsider educational methods that are appropriate for this situation, especially with regard to strategies for self-regulated education. Many educators practice methods that focus on memorization and indoctrination without informing students of the way in which the process of cognitive modelling for the teacher is carried out and how scientific foundations for knowledge are acquired. By perusing and researching many research and studies that included specialization in the methods of

teaching physical education in general and teaching football, as well as the experience of the supervisor and the work of the researcher in the teaching profession, specializing in physical education, it became clear to the researcher that teaching football does not keep pace with modernity and development in the field of education and teaching. The game of football is one of the sports that has accompanied modernity and the application of the possibilities and positives of modern technology. The teaching of skills in the lesson of physical education was limited to the use of established methods that are far from educational technology, which affected the learning of skills with less efficiency than the desired objectives in the educational process in the most appropriate and optimal way, in line with the spread, expansion, and development of the game principles. The educational technology and designs and positive aspects that tend to give a more role to the student to be the focus of the educational process has not been employed in diversifying knowledge, exciting students, and urging them to learn skills more effectively.

1.3 The Objectives

1. Designing and implementing educational units according to the cognitive modelling strategy supported by hypermedia.
2. Identifying the influence of the cognitive modelling strategy supported by hypermedia in learning some soccer skills.

1.4 The Hypotheses

1. There are statistically significant differences between the results of the pre and post-tests of the two research groups in teaching some soccer skills.
2. There are statistically significant differences between the control and experimental research groups in the post-tests in teaching some soccer skills.

1.5 The Limits

1. The Human Limit; A sample of second grade students in Al-Fatwa Secondary School for Boys in the Baghdad Education Directorate, Al-Karkh / Third for the academic year 2021-2022.
2. The Temporal Limit; 10/22/2021 to 12/1/2022
3. The Spatial Limit; Al-Fatwa Secondary School for Boys in the Directorate of Education of Baghdad / Al-Karkh, the third.
4. The Research Methodology and Field Procedures
5. The Research Methodology; the researcher used the experimental method for its suitability with the nature of the problem and the objectives of the present study.
6. Research Population and Sample

The researcher deliberately selected 136 students to be the research population from secondary school students in Baghdad Karkh the third Education Directorate for the academic year 2021-2022. As for the research sample, it has been selected in a systematic random way. It consists of students of the second grade, with four divisions, Division A with 35 students, Division B with 35 students, Division C with 32 students, and Division D with 34 students. The systematic random method is used to determine the two research groups. Division A is selected to be an experimental group and division D is selected to be a control group. The lists of each group for research are 20

students. Thus, the research sample consists of (40) students. The researcher adopted the experimental design of two equal, interconnected groups. This design is based on the basis of random testing for the experimental group, taking into account adopting the same procedures when selecting the control group. The experimental group is measured before applying the research program, and then

the dimensional measurements are taken and the same procedures are followed with the control group without exposure to the independent experimental variable. After selecting the experimental design, the researcher divided the sample into two equal groups of 20 students in each group. Equivalence scores are indicators of the pre-test as shown in Table (1).

Table 1: The scores of the arithmetic mean and standard deviation

Significance	Sig Value	Calculated T-Value	AF	SF	Experimental group		Control group		Measuring Unit	Soccer Skills
	Error ratio				Standard Deviation	Arithmetic Mean	Standard Deviation	Arithmetic Mean		
Insignificant	0.05	0.737	0.340	1.267	1.267	5.166	1.128	5,000	Score	Soccer Suppression
Insignificant		0.557	0.596	1.215	1,215	4.750	0,797	4,500	Frequency	Soccer Passing
Insignificant		0.104	1.695	2.005	2,005	7.250	0,937	6,166	Score	Scoring goals in football

Table (1) shows that arithmetic mean, standard deviation, the calculated T-value, and the level of statistical significance confirm the equivalence of the experimental and control research groups in the dependent variables under study.

3.3 Means, Devices, and Tools Used in the Present Study

It refers to the means and method by which the researcher can solve his/her problem, regardless of the tools, data, samples, and equipment. It includes the following:

1. The means used in the present study
2. Arabic and Foreign References and Sources
3. The Internet
4. Test Registration Form
5. The Devices and Tools Used in the Present Study

The researcher used the following devices to fulfil the research requirements

1. A personal calculator, camera, and display screen
2. 20 soccer balls
3. Whistle
4. Signs and cones of different heights

3.4 Field Procedures

3.4.1 Defining Soccer Skills

The skills are defined depending on the methodological skills prepared by the Ministry of Education, Directorate of General Curricula, and the physical education teacher's guide in secondary schools for the first semester, including passing, suppression, and scoring.

3.4.2 Determining the special tests for the selected skills

Standardized scientific tests are adopted based on the Iraqi environment, in recent years, and for similar sample level as shown below.

Passing Test; this test is carried out on a wall for a period of (15) seconds from a distance of (3) meters.

The test of receiving and stopping the movement of the ball inside a square of (2) meters from a distance of (6) meters under the foot

Stability scoring towards a goal divided into squares

3.4.3 Pre-tests

The pre-test was conducted on the two experimental and control research groups before starting the implementation of the educational curriculum in order to determine the level of soccer skills in the research sample. The tests were conducted on Wednesday 11/15/2021 in the stadium of Al-

Fatwa Secondary School for Boys.

3.4.4 The main experiment

The educational curriculum prepared by the researcher for the experimental group was implemented using the cognitive modelling strategy supported by Hyper Media by the teacher of the subject and the assistant work team as well as the control group that adopted the method used in teaching. The program began on Monday 11/15/2021 and continued until Thursday 1/20/2021.

3.4.5 Educational Curriculum

The researcher prepared regular, sequential educational units of gradual difficulty. These educational units were prepared according to the cognitive modelling strategy. The researcher reviewed a group of scientific sources. He benefited from previous studies. He also benefited from the expertise of specialists in teaching methods. When the researcher completed the survey experiments and pre-tests, the researcher prepared regular, sequential educational units of gradual difficulty. These educational units were prepared according to the cognitive modelling strategy, based on a social and cognitive perspective whose aim is to classify and analyse the different processes that play a role in learning according to the cognitive modelling strategy. Scientific steps for this strategy include:

1. Presenting the skill; the teacher introduces the skill that is the subject of the lesson and for which an educational material was prepared by activating prior knowledge of the skill to be taught. The skill is explained to the students so that they think about it themselves and present their previous experiences related to the concept of that skill and write what they learned in a worksheet.
2. Modelling by the teacher by playing the role of the model once and the role of the observer again, so he/she thinks out loud by presenting the study material and directs him/herself and presents a solution to the issues facing him/her as well as he/she reviews the solutions he/she provided in an organized and planned manner.
3. Roles Distribution; the teacher distributes the roles to the students, as one student plays the role of a model, and another student plays the role of an observer. They discuss the topic of the lesson, and each student takes into account his/her role in this issue.
4. Modelling by the student; each student plays his/her role, whether the student is a model or an observer. This process is considered a training for the student to solve mathematical problems or discuss the topic of the

lesson. The student compares his/her ideas with the student next to him/her. Each student has a conversation with his/her colleague who is sitting near him/her and compares their ideas. In this case, the student realizes his/her own thinking processes. The teacher provides feedback to them if required. The teacher also tests the student's understanding based on the skill he/she performs.

5. Discussion; After the students finish modelling their performance, the teacher discusses these skilful performances that could be performed practically by the students to rule out the wrong steps in implementing the skill and praise the positive steps and get them used to thinking about performing the skill well.
6. The researcher inserted a videotape into these computers with the technical performance under study, by filming a player from the youth team of Babylon Province, who performed the technical performance of the skills under study in an integrated manner that is integrated in all technical aspects and in all its stages. In addition, the researcher made several modifications for information and clarifications, especially the stages of the technical performance of the skills under study, in a way that serves the educational process because watching or seeing the pictured skill with the presence of information and clarifications related to it allows the learner to understand and assimilate the skill to be learned in a manner that achieves the desired benefit from the educational process from its skilful side. After presenting these skills and watching them by the members of this group, they implement and apply the

skill according to the repetitions specified for this purpose and according to the educational units established within the educational curriculum, including the Hypermedia program. The researcher used the educational units in line with the self-organized learning strategy in explaining and presenting the educational units for the skills in question. It is worth noting that such applications and programs have been used in many studies and research that used computers in learning methods. The AutoPlay program consists of the main interface, which is represented by a picture of a soccer ball on the field. The interface is preceded by the title (Learning the basic principles of some soccer skills). In the middle of the interface, there is the name of the supervising professor, followed by the name of the researcher.

3.5 The Post-Test

The post-test was conducted for the experimental and control research groups on Tuesday 1/25/2022 at exactly 9 am by providing all the equipment and tools approved for the pre-test and in the same school playground. The researcher took into account as much as possible the provision of the same atmosphere that was applied in the pre-test.

3.6 Statistical Methods

The researcher used the SPSS statistical package

4. Presentation, analysis, and discussion of the results

4.1 Presentation, analysis, and discussion of the results of the pre and post-tests of the experimental group

Table 2: the arithmetic means, standard deviations, the calculated T-value, and the significance of the differences between the results of the pre and post-tests of the experimental group

Significance of differences	Error ratio	Calculated T-value	AF	SF	Post-test		Pre-test		Measuring Unit	Soccer Skills	
					±A	S	±A	S			
Significant	0.000	8.990	0.834	2.166	0.792	6.916	1.215	4.750	Score	Suppression	Skills
Significant	0.000	7.000	0.866	1.750	0.668	6.916	1.267	5.166	Frequency	Passing	
Significant	0.000	5.380	1.073	1.666	1.443	8.916	2.005	7.250	Score	Scoring	

4. Discussion of the results

Table (2) indicates that there are significant differences in the tests as follows:

The results of the test of passing, suppression, and scoring indicate that there are significant differences between the pre and post-tests of the experimental group. The researcher attributes this to the influence of the cognitive modelling strategy, the exercises developed by the researcher, as well as the commitment of the students in implementing them and the role of the teacher in explaining and clarifying the correct method of performance as if it had an effective and positive influence on improving the level of accuracy of passing. The steps of teaching the cognitive modelling strategy have a positive influence on the delivery of knowledge to the learners so that the teacher presents his/her methods of processing information aloud while performing the procedures involved in order to learn a specific task and focus on highlighting the teacher's ways of thinking in learning. In this way, the learners put themselves in the frame of reference for the teacher. This leads to a sequential and positive interaction between the teacher and the student. The strategy of cognitive modelling is to deliver knowledge to the learners. In this strategy, the teacher presents his/her

ways of processing information aloud while performing the procedures involved in order to learn a specific task and focus on highlighting the teacher's ways of thinking about learning. Hence, the learners put themselves in the teacher's frame of reference.

There are significant differences between the pre and post-tests of the experimental group. The researcher attributes this to the influence of the cognitive modelling strategy and identifying the processes they use to achieve awareness and educational tasks and objectives. In this, the researcher agrees with (Missildine, 2004) ^[17] who emphasizes that the cognitive modelling strategy identifies the interaction between personal processes and the environment to obtain certain objectives to provide a description of why and how to test cognitive processes as well as building responses as a result of using certain strategies. It is interested in focusing on what drives learners to realize the importance of learning by modelling. It is one of the most important topics to attract the attention of researchers in various disciplines, in which the individual acquires new behavioural patterns and many cognitive skills by reaching laws that control the human phenomenon, which helps him/her to adapt to the social environment and his/her surroundings in order to

confront the challenges and difficulties he/she is exposed to. In addition, the researcher also attributes the results to the influence of the strategy of cognitive modelling supported by hypermedia in the preparatory section of the lesson, which makes students learn the skills, interact positively, understand the information, form a correct motor perception of the educational and technical steps of the skill, and provide them with feedback to a large extent as well as the ability of the learner to retrieve information at any time He/she wants to fix the skill well because of its display in

more than one way to make an interesting presentation, which makes the learning process enjoyable and fruitful. Using hypermedia leads to improving the quality of the interactive dialogue of the learner and attracting his/her interest to study the information. This leads to providing a stimulating educational environment for learning.

4.2 Presenting, analysing, and discussing the results of the pre and post-tests of the control group

Table 3: the arithmetic means, standard deviations, the calculated T-value, and the significance of differences between the results of the pre and post-tests of the control group

Significance of differences	Error Ratio	Calculated T-value	AF	SF	Post-Test		Pre-Test		Measuring Unit	Soccer Skills
					±A	S	±A	S		
Significant	0.010	3.084	1.497	1.333	1.029	5.833	0.797	4.500	Score	Suppression
Significant	0.004	3.633	0.953	1.000	1.128	6.000	1.128	5.000	Frequency	Passing
Significant	0.013	2.966	1.557	1.333	1.566	7.500	0.937	6.166	Score	Scoring

4.3 Presentation, analysis, and discussion of the post-test results for the two experimental and control groups

Table 4: the arithmetic means, standard deviations, the calculated T-value, and the significance of differences between the control and experimental groups in the skills under study for the post-tests

Significance of differences	Error ratio	Calculated T-value	Experimental		Control		Measuring Unit	Soccer Skills	
			±A	S	±A	S			
Significant	0.009	2.887	0.792	6.916	1.029	5.833	Score	Suppression	Skill abilities
Significant	0.024	2.421	0.668	6.916	1.128	6.000	Frequency	Passing	
Significant	0.031	2.304	1.443	8.916	1.566	7.500	Score	Scoring	

Discussion of the results

The researcher attributes the superiority of the experimental group over the control group to the positive influence of the cognitive modelling strategy supported by hypermedia given to the experimental group. The scientific steps of the strategy were made to teach soccer skills under study as they are given in a standardized manner according to the capabilities of the research sample. These steps ranged from easy to difficult and from simple to complex, which led to the implementation of the strategy in an optimal way that ensured the occurrence of development among the members of the experimental group, as giving information in a codified and thoughtful manner leads to the desired adaptations from teaching and vice versa. The results of modelling Knowledge in a scientific way for the students are positive and lead to the required learning.

The cognitive model is easy to understand, as it actually works with a higher perspective. It makes it easier to test, conduct experiments, verify the outputs, and how they have an influence on the model with all the experiments. The constraints that the actual model works with and how they affect the work can easily be determined.

The researcher followed a modern method according to scientific methods in terms of preparing the educational unit, dividing the time, and supporting the preparatory section with hypermedia that suits the level of the students. This influenced the difference between the two groups in learning soccer skills. There are different educational situations that the student goes through in Self-regulated learning strategy in order to reach success in performance. Good performance and discovery of the correct steps to perform the skill enables the learner to provide assistance, observation, and feedback for performance in the two stages, which follows the modelling) stage that relieves

tension during learning due to the active participation of the student and identifies the details of the motor skill. This is confirmed by the researcher, in agreement with Rabie Abdo, who indicates that the strategy of cognitive modelling supported by hypermedia refers to the process in which the student activates his/her knowledge and behaviours in an organized manner to obtain his/her objectives from a process through which the student can direct and monitor his/her own learning process. The use of the modelling strategy contributes to teaching In many aspects, including refining and treating behaviour through models and their applications by example, treating disorders such as shyness and speech defects, as well as developing technical, motor, and craft skills and giving learners the opportunity to practice these skills, which are suitable for most school subjects. Such skills can also be applied in all environments. They are greatly learner-centred. They motivate the learner and train him/her in the skills of thinking and answering questions. They also help learners to develop awareness of the cognitive processes that they perform, as well as achieving the learner’s positivity in the educational situation by involving him/her in the learning process, which makes the learner rely on him/herself to obtain information, the formation of values and attitudes, the development of thinking processes, and the ability to solve problems and team and cooperative work.

The modelling strategy depends primarily on simulation and imitation, which is one of the most effective methods in the educational process. The importance of this method is evident through the roles within the separation between the teacher and the student. It presents the information in a direct practical way. This, in turn, contributes to the development of the skill of the learner. The researcher agrees with Nawfal Fadhil that the involvement of the

senses in the educational process increases the sobriety and ease of learning skills in football. The use of educational videos and illustrations that combine image and sound, through which the speed of performance can be changed in relation to the skill, so it appears slow can help the student see some fine details of skill.

5. Conclusions and recommendations

5.1 Conclusions

1. There is a positive effect of the cognitive modelling strategy supported by hypermedia on learning some soccer skills for second grade students.
2. The cognitive modelling strategy supported by hypermedia encourages students to contribute to creativity and innovation in proportion to their experiences, skills, and personal talents.
3. The cognitive modelling strategy supports learners' information processing and supports their thinking in the skill learning process.

5.2 Recommendations

1. Paying attention to the strategy of cognitive modelling as an educational strategy in physical education lessons.
2. Emphasising benefiting from the positive aspects of hypermedia programs in facilitating the process of learning motor skills, especially in the early stages of learning, to reduce errors.
3. Emphasising providing cognitive and hypermedia learning strategies to support teaching physical education.
4. Conducting other research studies to find out the effect of the cognitive modelling strategy in developing experimental variables in the sciences of physical education.

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