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The Effect of an Educational Curriculum Based on the Constructivist Model of John Zahorik on Learning the Performance of Shooting Skills in Basketball among Fourth Preparatory Grade Students

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Abstract

The research aimed to design an educational curriculum based on the constructivist model of John Zahorik and to employ it in instructional exercises during practical physical education lessons in basketball. It also sought to identify the effect of this educational curriculum on learning the performance of basketball shooting skills among fourth preparatory grade students. The researchers hypothesized that there would be statistically significant differences between the pre- and post-test results of the experimental and control groups in performing shooting skills — free throw performance, jump shot performance, and lay-up performance — in basketball. Furthermore, they assumed that there would be statistically significant differences between the post-test results of the two groups in the same shooting skills. The experimental method was used, employing a two-group design (experimental and control) involving 30 fourth preparatory grade students for the academic year 2024–2025, representing 26.786% of the total population. The elements of the strategy were incorporated into instructional exercises and applied in practical basketball lessons, with four instructional units assigned to each shooting skill. One lesson was conducted per week, and the implementation continued for 12 weeks. The exercises were carried out during the main part of the lesson, which lasted 30 minutes of the 45-minute basketball class. After completing the experimental procedure, the results were processed using the SPSS statistical software. The most important conclusions and recommendations indicated that applying an

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educational curriculum based on the John Zahorik constructivist model in practical lessons helps improve students' performance in all shooting skills — free throw, jump shot, and lay-up — with superior results compared to those who learned without it. It is essential to increase the focus on practical applications to better integrate knowledge with performance, and to emphasize hands-on learning while minimizing excessive explanation when employing the elements of the curriculum based on Zahorik's model. Moreover, it is important to consider individual differences in students' responses to the stages of this model in both the instructional and practical aspects of the basketball units. The study further recommends paying greater attention to individual differences when applying this curriculum model and to diversify instructional situations and tasks to achieve the intended educational goals in teaching basketball skill performance.

Keywords: John Zahorik Constructivist Model, Basketball Shooting.

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Introduction

The study of cognitive structure underlying the performance of basketball shooting skills requires more attention when it comes to designing motor programs that would execute these skills. The execution of these skills has to be mastered properly in order to achieve them accurately. This requires researchers to contribute more attention in emphasizing the educational environment that strengthens these processes among students, activates their self-capabilities and promotes their role in cooperative learning. According to the specificities of each skill, modern constructivist models for the performance of learning skills ensure such learning. Thus, it is further confirmed that understanding the learners' characteristics while supporting them for the necessary changes in their learning environment in a manner consistent with these characteristics is important. Hence, this makes a case for academics to perform research that brings new dimensions in preparing students mentally through the understanding of performance of the skills.

"It is maintained that 'the basic knowledge base of the skill cannot be overlooked, so long as the function of such knowledge as a step in the production of a skill is not over-emphasized — whatever this component may add to actual performance applications seems to represent the true essence of such a skill. is to be done swiftly, accurately, effectively and with the least possible effort and lowest possible cost" (Al-Hayek, 2018, p. 144).

In addition, using the processes of inquiry and investigation (identifying problems, forming hypotheses, asking questions, analyzing data and determining conclusion) "contributes to developing and improving their level of organized thinking based on knowledge" (Mustafa, 2019, p. 127)

Motor skill acquisition is similarly considered active learning given the diverse interactive activities on offer which allow students to learn the required skills and knowledge. It is focused on ongoing assessment and feedback, in which the performance of students is evaluated, useful comments are given to them, and advice will improve their qualification and develop motor as well as technical skills (Mohammed 2018: 77–78).

Similarly, constructivist theory primarily emphasizes the assumption that learners continuously construct the knowledge required during learning, whether individually or collaboratively (Al-Juhani, 2018, p. 17).

The researchers hope that knowing how the brain works, and thus providing solutions to achieve efficiency in satisfying students needs when they create need of immediate or future solution. This is linked to a number of skills, like an ability to remember past experiences or perceive current events through those experiences. This is determined by the capabilities available to the student within a general set of logical constraints on what can be achieved when designing motor programs. So, previously formed programs that have been stored and remembered can be reactivated to match the requirements of learning tasks encountered in motor learning units.

So it might be that I want a constructivist learning model, which could potentially enhance the quality of education, fit learners to acquire learn and independently draw knowledge from. This, in turn, has a positive impact on their ability to organize cognitive structures and cope with ongoing changes (Al-Thuwaini, 2023, p. 167).

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John Zahorik is another representative of the modern constructivism who introduced clear stages based on main notions characterizing constructivist education. This means generating knowledge through a sequence of steps that forms new knowledge based on previous awareness and encourages the learner's mind to ponder. Additionally, it is responsible for transferring the impact of knowledge to such events in life that learners may face and allows learners to describe mental processes (Al-Khafaji et al., 2023, pp. 57–60).

The John Zahorik model focus on the students on learning process and they act as centre point therefore have to learn in real time which should be maximum reachable period according to cognitive capabilities. For this reason, students often seek direct assistance and select relevant points or situations that they think are useful and important in their learning process (Hazza, 2022,p.22).

The John Zahorik model is an example of a modern constructivist approach designed to develop students' cognitive structures and may aid in increasing the cognitive achievement and motivation of learners to think and inquire (Issa & Abu Labdeh, 2016, p. 224).

This also provides a similar pathway of students' self-learning tasks, so that they can be both responsible and more capable to create new ideas during lessons (model by John Zahorik). Constructivism builds on the idea that anything constructed and owned by a learner bears meaning for them, drawing attention to internal cognitive functions and how they are applied toward effective learning (Ahmed, 2021, p. 416).

The practical importance of the research is based on its usefulness to physical education teachers at secondary schools in aiding them with their educational work within a practical lesson setting for fourth-grade preparatory students. Its purpose is to establish a learning environment that focuses on sensory utilization and the construction of students' cognitive structures necessary for fulfilling educational objectives based on skills. In practice, the significance of this constructivist model of John Zahorik is one that aids preparatory-stage students in their own formation of new experiences and reshaping concepts that facilitate utilizing improved programs to develop beneficial learning outcomes through practice and application within school curricula.

This detailed description captures the right research issue. Based on the exploratory qualitative researcher method adopted in the framework of approached studies and based on the academic research work undertaken by researchers within the field of motor learning in a focus study visit to preparatory schools, it was found that there is a clear weakness in performance: "the emerging period (early curve)" "Learning basketball shooting skills headings (free throw- jump shot - lay-up shot) fourth-grade preparatory students. As mentioned before, these skills need performance learning to achieve accuracy. Therefore, researchers concluded that performance knowledge should be concentrated on when utilizing educational exercises practically which expected to teach those three capacities. The intent of this method is to assist and aid students in a group plan of study.

Therefore, the research aims to prepare an educational program in light of constructivist John Zahorik model and apply it in education exercises during practical physical education basketball lessons with determination of the effect of this educational program on learning shooting skills among fourth-grade preparatory students.

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The researchers propose study hypothesis that states, 1. There are significant difference between the offensive shooting skills between both experimental group and control group in their pre-test results and post-test results in basketball shooting skills (free throw jump shot & lay-up shot). They also hypothesize that there is a statistically significant difference in the post-test results of the experimental and control groups for performance on these basketball shooting skills.

Method and Procedures

The study adopted an experimental approach using a pre-test–post-test design with equivalent experimental and control groups. The research population consisted of fourth-grade preparatory students in the morning study at Al-Mutafawiqeen Secondary School for Boys, within the formations of the Rusafa Second Directorate of Education for the academic year (2024–2025). The total number of students in this population was 112, naturally distributed into three classes. They were selected because they represented the population of the research problem.
From this population, 30 students were selected from two classes using a simple random sampling method, representing 26.786% of the total population. According to the requirements of the study, 10 students were randomly selected from class (A) as a pilot sample, representing 8.929% of the original population. The main sample consisted of students from classes (C) and (D). Based on the experimental design requirements, one class was randomly selected to represent the experimental group, consisting of 15 students from class (C), while 15 students from class (D) represented the control group.

To measure the performance of basketball shooting skills (free throw, jump shot, and lay-up shot), the researchers adopted a performance evaluation form to assess the participants' technical performance in each test without considering accuracy. The performances were video recorded and later evaluated by experts based on technical criteria. The scoring distribution was as follows:

- Preparatory phase: 3 points
- Main phase: 5 points
- Final phase: 2 points

Thus, the total score reflected the technical quality of skill performance.
The researchers carried out practical procedures to incorporate the principles of constructivist theory and the application requirements of the educational program according to the John Zahorik model, integrating them into the educational and practical components of the instructional unit used in the practical basketball lesson. This was implemented through the following procedures:

- Precisely determining the objective of each instructional exercise for each of the three skills.
- Focusing on the cognitive structure to support knowledge of performance, teaching the mind and body simultaneously to produce the required motor behavior according to the correct model of each skill. This was implemented while considering individual differences and the specificity

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of motor learning in basketball by providing rich informational input within the applied learning environment of the instructional units based on the constructivist John Zahorik model.

- The teacher used expressive body language when explaining the skill performance and its details, activating students' prior knowledge and employing attractive instructional illustrations that represented the segmented parts of each of the three skills. Students then applied the exercises of the educational program based on the John Zahorik model, integrating mind and body while comparing their performance with the required model to reach the correct execution of each targeted skill.
- Students engaged in activities simulating real basketball playing situations as well as applied instructional activities based on the John Zahorik constructivist model. These activities enabled students to process presented information through instructional posters using strategies such as discussion, questioning, and discovery, supporting the cognitive structure needed to build motor programs for the three skills. Feedback was provided by the teacher, and students participated in individual or group dialogue about the skill details and training methods. students were prompted to separately analyze and verbalize thinking processes so that peers could learn from their analysis during the application of the instructional exercises. This was followed up with a collaborative group discussion of the instructional exercises.

The Student's Role in Designing the Learning Environment

In this type of motor learning, the student's task included:

1. Activating prior knowledge about the targeted skill in the instructional unit by engaging their senses in receiving new information.
2. Acquiring new information about the skill within a learning environment rich in knowledge of performance, supported by illustrative images of skill phases through instructional posters and interaction with peers in a positive cooperative active-learning atmosphere.
3. Understanding how to apply the targeted skill through discovering the details of its performance.
4. Thinking about the information internally to build knowledge of performance and linking it with previous experiences to construct the motor program of the new skill within the instructional unit.
5. Using the acquired information in the practical performance of the skill by integrating mental and physical processes.

The Teacher's Role in Designing the Learning Environment

The teacher's role included:

1. Guiding students to activate their prior knowledge about the targeted skill in the instructional unit to connect it with new information provided within the designed practical learning

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environment, enabling students to generate their own experiences regarding the skill through linking cognitive knowledge with practical application.
2. Considering individual differences among students by expanding and diversifying learning activities.
3. Refining students' cognitive structures through continuous feedback during practical performance and helping them organize the sequence of information related to the skill phases.
4. Encouraging cooperative learning, dialogue, and discussion among students to reach the required knowledge of performance.
5. Providing reinforcement to consolidate and support skill performance and stimulating students' motivation and challenge.

Practical Tasks within the Instructional Units According to the John Zahorik Model

First: Educational Component

The teacher presented the phases and details of the skill using various instructional aids appropriate to students' age level. The skill performance was explained with and without the ball while gradually presenting performance-related information. Students' curiosity and interest in discovering the skill were encouraged through a positive relationship with them. They were also encouraged to move from isolated individual learning situations toward forming healthy cooperative groups. This process activated the elements of the John Zahorik model—activation, acquisition, understanding, and thinking about the information presented through explanation and demonstration—while minimizing explanation time as much as possible.

Second: Practical Component

Students applied knowledge of performance through educational situational exercises, avoiding coercive learning methods. They were allowed to return to the model and discuss freely among themselves. Students were given full opportunity to construct knowledge about the targeted skill performance and continue practicing it with accompanying feedback. Application followed the active learning cycle, utilizing students' understanding and reflection on the information acquired in the instructional unit. Interaction among student groups was increased to reach new knowledge through practical application. The comparison system in motor control was activated by focusing on solving applied educational situations of the skill, stimulating inquiry, emphasizing thinking about skill information, and continuous correction by the teacher, thus practically implementing the elements of the John Zahorik model in skill performance learning in basketball.

Time Plan and Implementation of the Instructional Units

The duration of each instructional unit was 45 minutes, distributed as follows:

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1. Preparatory section: Physical activities to prepare the body for performing the targeted skill (10 minutes).
2. Main section: Knowledge and application of the instructional program based on the John Zahorik model (30 minutes), consisting of:
3. Educational component: 5 minutes
4. Practical component: 25 minutes
5. Final section: Relaxation, cooling down, and a small game for motivation and recreation (5 minutes).

Each shooting skill was allocated four instructional units, implemented at a rate of one unit per week on Sundays. The implementation lasted 12 weeks in total. The main section (30 minutes) of the physical education class (45 minutes total) included 5 minutes for the educational component and 25 minutes for the practical component. Within this period, four exercises were implemented, each lasting approximately 5–6.5 minutes, with short rest intervals distributed between them. The remaining time was allocated to the preparatory (10 minutes) and final (5 minutes) sections, which were managed by the physical education teacher without intervention from the researchers.

Pilot Study

The pilot study aimed to examine the practical aspects of the basketball skill tests and the educational program components. It was conducted on 10 students from the pilot sample on Sunday (22/2/2025). Its objectives were:

1. Ensuring students' acceptance of the skill tests and the instructional exercises based on the John Zahorik model.
2. Training the assisting team on the conditions and procedures for applying the skill tests.
3. Ensuring the suitability of the video camera used to record skill performance tests.
4. Identifying potential obstacles or errors that might occur during the implementation of the instructional units.
5. Confirming the necessity that students be in a complete rest state before performing the three skill tests and conducting a familiarization unit introducing the three skills to the main research sample.

Implementation of the Main Experiment

The experiment began with pre-tests for the three dependent variables applied to the 30 students in the research groups. The three skill tests were video recorded at 9:00 a.m. on Thursday (27/2/2025) at the same school.

The educational program based on the constructivist John Zahorik model was then applied to the experimental group from Sunday (2/3/2025) until Sunday (18/5/2025). Meanwhile, the control group continued learning using the traditional instructional method applied in their regular lessons.

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Both groups received the same number of lessons and instructional time to learn basketball shooting skills.
The experiment concluded with the post-tests, conducted on Monday (19/5/2025).

Statistical Analysis

After completing the experiment, the results were analyzed using the Statistical Package for the Social Sciences (SPSS) to calculate:

- Percentage (%)
- Arithmetic mean
- Standard deviation
- Levene's Test for homogeneity of variance
- Independent samples t-test
- Paired samples t-test.

Results

Table 1. Shows The Results Of The Pre-Tests Between The Experimental And Control Groups.

Skill Performance Tests	Group	N	Mean	SD	Levene's Test	Sig.	t-value	Sig.	Difference
Free Throw Performance (Score)	Experimental	15	1.93	1.163	0.018	0.893	0.479	0.636	Not significant
	Control	15	2.13	1.125					
Jump Shot Performance (Score)	Experimental	15	2.07	1.387	0.092	0.764	0.138	0.891	Not significant
	Control	15	2.13	1.246					
Lay-up Shot Performance (Score)	Experimental	15	1.80	1.082	1.206	0.282	0.150	0.882	Not significant
	Control	15	1.73	1.335					

Table 2. Shows the results of the pre-test and post-test comparisons for the experimental and control groups.

Tests	Group	Comparison	Mean	SD	Mean Difference	SD Difference	t-value	Sig.
Free Throw Performance (Score)	Experimental	Pre-test	1.93	1.163	6.333	0.976	25.135	0.000
		Post-test	8.27	0.458				
	Control	Pre-test	2.13	1.125	3.467	1.407	9.539	0.000
		Post-test	5.60	1.183				
Jump Shot Performance (Score)	Experimental	Pre-test	2.07	1.387	6.067	1.710	13.741	0.000
		Post-test	8.13	0.516				
	Control	Pre-test	2.13	1.246	3.533	1.302	10.510	0.000
		Post-test	5.67	1.113				

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Lay-up Shot Performance (Score)	Experimental	Pre-test	1.80	1.082	6.533	1.187	21.313	0.000
		Post-test	8.33	0.488				
	Control	Pre-test	1.73	1.335	4.267	2.219	7.447	0.000
		Post-test	6.00	1.309				

Table 3. Shows The Results Of The Post-Tests Between The Experimental And Control Groups

Skill Performance Tests	Group	N	Mean	SD	t-value	Sig.	Difference
Free Throw Performance (Score)	Experimental	15	8.27	0.458	8.141	0.000	Significant
	Control	15	5.60	1.183			
Jump Shot Performance (Score)	Experimental	15	8.13	0.516	7.788	0.000	Significant
	Control	15	5.67	1.113			
Lay-up Shot Performance (Score)	Experimental	15	8.33	0.488	6.468	0.000	Significant
	Control	15	6.00	1.309			

Discussion

A review of the pre- and post-test results presented in Table (2) indicates improvement in the performance of the basketball shooting skills (free throw, jump shot, and lay-up shot) for students in both research groups. The results shown in Table (3) also demonstrate that students in the experimental group outperformed their counterparts in the control group in the improvement of these three dependent variables.

The researchers attribute this improvement and superiority of the experimental group to the application of the educational program based on the constructivist John Zahorik model, which helped prepare the cognitive structure of students' minds to manage the interaction of a rich flow of knowledge within the learning environment of the instructional unit. This environment was rich in information related to the technical performance of the three shooting skills and required students to activate their memory in order to answer unexpected questions or participate in asking questions about performance details. It also placed students in educational situations that required them to question the type of knowledge support they needed regarding performance.

The program emphasized the development and support of the cognitive structure through all elements that could correct motor skill performance. Consequently, the learning environment required mental processes aimed at organizing and controlling knowledge so that learning would become meaningful. This occurred through the integration of motivational elements in a positive direction that supported the achievement of educational objectives. The instructional program based on the John Zahorik model enhanced students' ability to utilize information within their cognitive structures in the practical context of performance, enabling them to form new concepts related to applicable knowledge. This was achieved through stimulating the brain to receive information and enabling students to interact with and apply this information in practical lessons.

The researchers also attribute these results to the positive effect of the proper implementation of the steps and components of the John Zahorik model in helping students complete the mental processes required to design the motor program. The learning tasks were directed toward the required objective while avoiding distractions or unnecessary movements

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accompanying performance. This process required students to activate mental imagery of knowledge, encode it, and activate cognitive processes to answer questions related to the educational situations within the instructional exercises of the program.

The active learning environment, which focused on knowledge of performance, also helped regulate the learning environment by controlling and organizing stimuli and adapting them to the students' age level, abilities, and individual differences. The presentation of information within the model, which continued during the practical part of the main section of the instructional unit, required discussion and dialogue among students, in addition to continuous feedback that activated the comparison mechanism in motor control between the performed movement and the desired movement.

Furthermore, the improvement and superiority of the experimental group in the post-test results can also be attributed to the effective application of the steps and components of the John Zahorik model in educational situations. These exercises increased each student's opportunity to practice and apply skills based on knowledge of performance obtained through analyzing performance details and understanding the requirements of the motor task in order to achieve the desired conformity with the model presented in the instructional posters that illustrated the correct performance of the skill.

The effective distribution of student groups in the experimental group and the practical applications of the John Zahorik model contributed to the success of the instructional unit by organizing questions, designing practical educational situations, teaching critical evaluation of skill performance, encouraging deep exploration of performance knowledge, generating sub-questions related to skill performance, developing applications of this knowledge, and sharing knowledge experiences among students. These elements were designed according to the abilities of fourth-grade preparatory students, enabling them to achieve mastery through practice and application, which is the foundation of improvement in motor skill learning supported by knowledge of performance.

Additionally, the teacher's use of motivational expressions to enhance students' confidence helped students benefit from the role of cognition in mastering movement. The use of multimedia tools, including videos and instructional posters showing the phases of the skill, and the appropriate presentation of images within the sports hall during the instructional part also supported students' cognitive structures. Repeated demonstrations of each skill component reinforced students' understanding of the sequence of movements required for the skill—from the preparatory phase to the main phase and finally to the concluding phase.

In this regard, it has been stated that "the use of peer and group review strategies has been supported by several theories, including Social Constructivism Theory, which assumes that knowledge is socially constructed and that integrating students into a knowledge community leads to collaborative engagement and the construction of new information through social interactions, thereby deepening each learner's understanding" (Choi et al., 2014, p. 233).

Moreover, it has been noted that "motor learning of a skill cannot occur without organized knowledge about performance that relies on the brain's interpretation of stimuli through cognitive

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processes responsible for forming motor programs in memory according to the learner's abilities and capacities" (Al-Bayati, 2023, p. 18).

Similarly, the discovery of knowledge through the application of the John Zahorik model places students in learning situations that encourage collaboration with other learners to understand, activate, and apply knowledge, thereby strengthening relationships among learners in such situations (Al-Hamdani, 2020, p. 255).

Furthermore, "students spend most of their time paying attention and listening to the teacher's explanations and instructions; however, the steps of the John Zahorik constructivist model help organize the benefit of all information in a structured manner that facilitates interpretation and enables students to accomplish the tasks assigned to them during the lesson" (Mohammed, 2021, p. 4695).

Constructivist education is also considered an instructional approach in which the learner faces a problem and attempts to solve it by discovering concepts and principles independently and interacting with the learning situation. The learner continuously seeks knowledge and is interested in the coherence of cognitive structures and their elements because new learning becomes integrated with the learner's existing cognitive structures, making it more retainable and retrievable and better able to meet the learner's needs (Muqabla & Al-Atoum, 2023, p. 356).

As for the improvement observed in the basketball skill performance of the control group, the researchers attribute it to the effectiveness of the traditional instructional method used in the lesson. This method provided detailed information that supported students' knowledge of the lesson content and contributed to building a cognitive structure that helped them understand the requirements of practical performance. However, their performance level did not reach that of their counterparts in the experimental group.

It has also been indicated that "learning through the application of the John Zahorik model strengthens the connections within the learner's cognitive structure, enabling creative responses to questions during the lesson and effective translation of knowledge into skill performance" (Carmen et al., 2017, p. 66).

In addition, "repetition is one of the fundamental characteristics of motor skill learning, as learners must practice movements repeatedly in order to improve performance and strengthen motor memory" (Bhanu, 2015, p. 146).

Finally, learners must develop the ability to self-evaluate their skill performance independently, as self-evaluation helps identify areas that require improvement and development to enhance performance (Al-Aboudi, 2019, p. 77).

Conclusions

1. The application of the educational program based on the constructivist John Zahorik model in practical lessons contributes to improving the performance of basketball shooting skills (free throw, jump shot, and lay-up shot) among students who learn through this model, outperforming their peers who learn through traditional methods.

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2. Greater emphasis should be placed on practical applications that utilize knowledge of performance, with a focus on actual performance and minimizing lengthy explanations when implementing the components of the educational program based on the John Zahorik model, while considering individual differences in students' responses to the steps of the model within both the instructional and practical components of basketball instructional units.
3. It is important to give increased attention to individual differences when applying the educational program based on the John Zahorik model, and to diversify and vary educational situations and tasks in a way that supports the achievement of the instructional objectives related to teaching basketball skill performance.

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References

Abdulghani, L. Y., Abdulghani, M. Y., & Abdulkareem, O. W. (2025). Designing a palm pressure measurement device to improve motor coordination in freestyle swimming among female students. Journal of Physical Education and Sport, 25(7), 1506–1513. https://doi.org/10.7752/jpes.2025.07168

Abdulhussein , A. (2025). Effect Of Interactive Video Analysis Training on The Acquisition of Dribbling Skills in Basketball Among Students at College of Physical Education and Sports Sciences Baghdad University. Journal of Physical Education, 37(4), 1193-1205. https://doi.org/10.37359/JOPE.V37(4)2025.2367

Abdulkareem, O. W., & Ali Hassan, M. F. (2025). impact of mental games on improving shooting accuracy among young basketball players in Iraqi clubs. Scientific Journal of Sport and Performance, 4(3), 342–351. https://doi.org/10.55860/OHNP7224

Abdulkareem, O. W., & Sattar Jabbar, H. (2025). Comparative Biomechanical Analysis of Three-Point Shooting Between Elite Iraqi Basketball Players and International Counterparts. Journal of Sport Biomechanics. https://doi.org/10.61186/JSportBiomech.11.3.326

Ahmed, W. (2021). The effect of using the John Zahorik model in teaching social studies on cognitive achievement and the development of divergent thinking skills among second preparatory grade students. *Journal of the Faculty of Education, Sohag University*, (91), 4140–4179.

Al-Aboudi, F. N. A. (2019). *The effect of the (S.N.I.P.S) strategy according to dual coding on visual thinking and learning the skills of setting and receiving the serve in volleyball among fifth preparatory female students* (Master's thesis). University of Baghdad, College of Physical Education and Sports Sciences.

Alani, Y., & Hameed, H. (2022). Using Explosive Strength Exercises for Improving Wheelchair Basketball Scoring in Iraqi National Basketball Players. Journal of Physical Education, 34(4), 582-590. https://doi.org/10.37359/JOPE.V34(4)2022.1377

Al-Bayati, Z. T. A. R. (2023). *The effect of the rapid learning method using optical technologies on reducing cognitive load, activating working memory, and learning tennis skills among students* (Master's thesis). University of Baghdad, College of Physical Education and Sports Sciences.

Al-Hamdani, I. (2020). The effect of the John Zahorik constructivist model on the achievement of third intermediate grade female students in mathematics and the development of their lateral thinking. *Journal of Basic Education Research*, 3(18), 205–276.

Al-Hayek, S. S. (2018). *Principles of thinking*. Amman, Jordan: Wael Publishing and Distribution.

Al-Juhani, H. M. M. S. (2018). *An educational program based on constructivist theory and brain-based learning and its effectiveness in developing mathematical knowledge among secondary school female students* (Doctoral dissertation). Imam Muhammad ibn Saud Islamic University, College of Social Sciences.

Al-Thuwaini, M. F. M. (2023). The effect of an educational program using the constructivist learning model on cognitive achievement and the performance level of some track events in Kuwait. *Scientific Journal of Sports Sciences and Arts*, Helwan University, Faculty of Physical Education for Girls, 75(4).

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https://icope.uobaghdad.edu.iq

Amer Abdulhussain, A., Sinan Atiyah, H., Hussain Jaber, O., Ridha Ghanim, M., Hashim Hammood, A., & Mohammed Saleh, Y. (2025). The Impact of Jesko's Strategy with Sequential Exercises on Learning the Skill of Dribbling in Basketball. Annals of Applied Sport Science, 13(4), 0-0.

Bhanu, S. S. (2015). Understanding movement and learning. *Journal of Education and Practice*, 6(13), 144–147.

Carmen, F., Mercedes, F., Gloria, S., Marta, S., & Dolores, M. (2017). Divergent thinking and its dimensions: What we talk about and what we evaluate? *Anales de Psicología*, 33(1), 40–47.

Choi, H. H., Van Merriënboer, J. J., & Paas, F. (2014). Effects of the physical environment on cognitive load and learning: Toward a new model of cognitive load. *Educational Psychology Review*, 26(2), 225–244.

Hazza, F. A. (2022). *The effect of the John Zahorik constructivist model on generative thinking and learning some basic futsal skills among female students* (Doctoral dissertation). University of Karbala, College of Physical Education and Sports Sciences.

Issa, G., & Abu Labdeh, I. (2016). The effectiveness of using two teaching models based on the constructivist approach in students' motivation toward learning science. *Journal of Educational and Psychological Studies*, 10(1), 222–235.

Mohammed, A. (2018). Active learning in physical education: An applied study on primary school students. *Journal of the Faculty of Physical Education*, 24.

Mohammed, M. (2021). The effectiveness of the John Zahorik constructivist model in correcting misconceptions in science concepts and developing imaginative thinking and scientific sense among second preparatory grade students. *Journal of the Faculty of Education, Sohag University*, (91), 4694–4777.

Muqabla, F., & Al-Atoum, A. (2023). The effectiveness of a program based on constructivist theory in modifying time perspectives among tenth-grade female students. *Irbid Journal for Research and Human Studies*, 4(25), 320–355.

Mustafa, M. N. (2019). *Scientific inquiry* (3rd ed.). Riyadh, Saudi Arabia: Al-Rashed Library.

Sehen , K. ., Alia , W. ., & Aziz , T. . (2025). The Reality of Smart Leadership in the Iraqi Basketball Federation in Organizing Tournaments and Matches from Workers' Perspectives. Journal of Physical Education, 37(1), 17-36. https://doi.org/10.37359/JOPE.V37(1)2025.2058

Suhail, M. ., & Hussein , S. . (2025). The Effect of a Rehabilitation Program on Improving Knee Joint Range of Motion in Injured Basketball Players. Journal of Physical Education, 37(4), 1335-1342. https://doi.org/10.37359/JOPE.V37(4)2025.2069

Yahya, S. Z., Rida, B. K. A., & Abdulkareem, O. W. (2024). The effect of a laser device on some biomechanical variables of the rotational phase in the achievement of 100 m freestyle swimming for the Iraqi team (16-18 years old). Scientific Journal of Sport and Performance, 3(4), 507-512.