



The effect of the concentration strategy for serious creativity on productive thinking, performance and accuracy of volleyball transmission skill among students

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Abstract

This study aims to build a volleyball produced thinking, preparing educational exercises in volleyball with a focus strategy for serious creativity, and to identify the strategy of focusing for serious creativity in productive thinking and the performance and accuracy of the skill of transmitting volleyball for students, and the two assumptions were that there are statistically significant differences between the results Tribal and posttests for the experimental and controlled research groups in productive thinking and the performance and accuracy of the skill of volleyball, and there are statistically significant differences between the results of the dimensional tests of the experimental and controlled research groups in productive thinking and the performance and accuracy of the skill in volleyball, and the experimental approach was adopted by the design of the experimental and control groups, on (70) A student from the fourth preparatory grade from the exception of the excelling representing (42,424 %) of this society, A scale for the volleyball produced and the employment of the strategy vocabulary was built with educational exercises and applied in the practical lesson in volleyball by (3) practical lessons for performance and (1) lesson for its accuracy and a total of (4) lessons, at the rate of lesson (1) one per week, and it continued for a period of (4 Weeks, and the search procedures for the duration of (12/2/2024) continued until (3/25/2024) and after the completion of the research experience, the results were addressed with (SPSS) system to form the conclusions and recommendations that the employment of educational exercises for volleyball with the vocabulary of the focus strategy for serious creativity in practical lessons Fourth preparatory students, Its application helps in improving the level of volleyball produced, and in improving the performance and accuracy of the transmission skill facing the bottom of the volleyball for students who study it, and by superiority over their peers who study without it, and it is necessary when adopting mental measurement, especially the volleyball produced for each student in lessons The process to support improving the performance and accuracy of the transmission skill facing from the bottom in volleyball, and it is necessary not to exaggerate the importance of the cognitive structure and focus on practice and repetition in improving the performance and accuracy of the transmission skill facing from the bottom in volleyball in the

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center of good use of focus for serious creativity in drawing motor programs for that skill performance and accuracy.

Keywords: the focus strategy for serious creativity, productive thinking, performance and accuracy of

Introduction:

Volleyball skills serve as the cornerstone for practicing the game, distinguished by their diversity and cohesion. It is evident that every offensive skill is matched by at least one defensive skill. For instance, the execution of a serve is countered by the performance of a reception skill. Additionally, serving is an essential component that acts as the starting point of the match (Nouri, 2023, p. 434).

Moreover, "volleyball requires a broad and varied awareness, reflected in the court dimensions, the number of players, and the point-scoring system. As a result, players need the ability to analyze and think quickly in different game situations" (Najm & Abdul Kareem, 2022, p. 463).

The researcher posits that during practical volleyball lessons, students are required to observe, interact with their observations, and apply them in accordance with the lesson's objectives. This necessitates a focus on students' thinking processes and the proper direction of their ideas. Thinking plays a crucial role in shaping their reactions to the interactive educational environment in these practical lessons and activates the cognitive structure necessary for successful skill execution.

Given that "an individual's surrounding environment has a clear impact—or in some cases dictates—their thought process, a psychologically healthy environment fosters sound thinking. Conversely, an environment with weak components or unstable events may lead to disruptions in an individual's thought processes" (Mikhail, 2022, p. 42).

The significance of addressing thinking lies in finding appropriate solutions to pressing theoretical and practical problems faced by individuals in both natural and societal contexts. This persistent need drives continuous exploration for new methods and approaches to overcome challenges. Thus, thinking as a cognitive process is a fundamental element of the intellectual structure individuals possess. It is characterized by its social nature and systemic functioning, allowing it to interact with other cognitive processes, such as perception, imagination, and memory. Additionally, it influences and is influenced by emotional, affective, and social aspects of personality (Rezouqi et al., 2019, p. 11).

Productive thinking is defined as "a type of thinking that combines creative and critical thinking skills to generate new ideas" (Hurson, 2008, p. 45). It is also described as "a systematic scientific tool that integrates self-organization, innovative thinking, and critical thinking skills. Through it, individuals engage effectively and qualitatively with their environment, enabling them to achieve novel outcomes that deviate from the conventional" (Rezouqi et al., 2019, p. 15).

Furthermore, productive thinking is identified as "a set of mental processes or activities that encompass both critical and creative thinking patterns to produce new and effective ideas. These reflect the learner's ability to acquire thinking skills critically and creatively with minimal time and effort" (Hazza, 2018, p. 117).

Productive thinking is defined as a form of thinking aimed at generating new and innovative ideas or solutions, emphasizing creativity and analysis to achieve useful and novel



outcomes. It is fundamental in fields like entrepreneurship, design, and problem-solving. The characteristics of productive thinking can be summarized as follows: (Runco, 2014, p. 17)

- **Creativity:** The ability to think outside the box and generate unconventional, innovative ideas.
 - **Analysis:** The capability to systematically analyze information and data for a deeper understanding of the problem.
 - **Flexibility:** The skill to adapt approaches or methods when necessary, avoiding rigid or conventional thinking.
 - **Curiosity:** A persistent desire to learn and explore.
 - **Perseverance:** The determination to continue working on an idea or problem until a solution is achieved.
 - **Critical Thinking:** The ability to objectively evaluate ideas and solutions to identify the best option.
 - **Organization:** The skill to structure ideas and information effectively to reach desired results. The significance of productive thinking in a learner's life lies in enhancing their ability to solve problems and avoid dangers by making inferences and analyses. (Al-Qahtani, 2021, p. 181)
- Productive thinking is also seen as a systematic approach to problem-solving and decision-making, focusing on finding creative and practical solutions to various challenges. The principles and practices that contribute to developing productive thinking include: (Kaufman & Other, 2019, p. 2)
1. **Clear Goal Setting:** Clearly understanding what needs to be achieved to guide thinking toward appropriate solutions.
 2. **Information Gathering:** Conducting research and collecting relevant data for a better understanding of the problem.
 3. **Creative Thinking:** Employing techniques such as brainstorming to generate innovative and unconventional ideas.
 4. **Option Analysis:** Evaluating available options against defined criteria to select the optimal solution.
 5. **Planning and Execution:** Developing a clear action plan for implementing the chosen solution and following through with its execution.
 6. **Evaluation and Improvement:** Assessing outcomes post-implementation and making necessary refinements.

The researcher posits that incorporating productive thinking into volleyball practical lessons acts as a cognitive support mechanism, guiding skillful performance and serving as a criterion for evaluating students' responses and their ability to achieve educational goals. This minimizes distractions or wasted efforts during the application of educational tasks in practical lessons.

Studies highlight the correlation between thinking and muscular activities in individuals. Increased engagement in thinking is often associated with heightened muscular contractions, and vice versa. Relaxation is observed when the individual is not actively thinking. (Abu Jado & Noufel, 2010, pp. 38–39)

Activating the student's role during lessons allows meaningful participation in activities, moving them beyond a passive recipient role. (Abd Ali & Jabbar, 2022, p. 3)

Research also underscores the principle that the brain operates on a "use it or lose it" basis, emphasizing the necessity of fostering thinking to maintain cognitive activity. (Nadia, 2012, p. 213)



The researcher further emphasizes the critical role of cognitive factors and mental frameworks in volleyball skill performance. This necessitates exploring teaching strategies that enhance thinking and showcase learner creativity, such as the **Focused Strategy for Serious Creativity. Creativity as a Core Component of Productive Thinking**

Creativity is described as "a complex mental process driven by the desire to explore and deviate from traditional methods, resulting in ideas and solutions characterized by seriousness, originality, and flexibility. It focuses on producing innovative, meaningful outputs that enable learners to solve problems hindering their progress uniquely and effectively." (Al-Masry, 2017, p. 268)

The educational process aims to enable learners to generate multiple solutions to problems and expand their search for creative and unconventional ideas. This approach enriches the teaching and learning experience, supporting skill retention and practical application in lessons.

Teaching Strategy Implementation

In volleyball lessons, applying a focused strategy for serious creativity begins with clear articulation of the focal point of the task. The instructor outlines the stages or sections of the skill and emphasizes details of execution. Students are guided to direct their attention toward achieving the set objectives, learning to regulate their focus, timing, and the steps necessary for task execution.

This approach includes three types of discipline:

1. **Focus Discipline:** Ensuring clarity in the student's thinking process to achieve desired results through concentrated efforts.
2. **Method Discipline:** Employing structured procedures during focus to implement the necessary steps.
3. **Time Discipline:** Adhering to a specified timeframe to maintain concentration and efficiency during task execution.

By integrating strategies tailored to productive thinking and creativity, instructors can foster skill improvement and encourage innovative problem-solving in practical volleyball lessons.

Over 80% of the experts agreed to retain the items, their alternatives, the scoring key, and the scale instructions without any deletion, merging, modification, or addition to the items.

- **Pilot Testing of the Scale:** The researcher conducted a preliminary trial of the scale on Monday, February 12, 2024, after finalizing its initial draft. This trial involved the exploratory sample of five students to address any potential obstacles in its application and to ensure that students could comprehend the scale's items, alternatives, and response instructions. The average response time was calculated at eight minutes. This trial highlighted the importance of reassuring the research sample that their performance on the scale would not affect their success in the practical volleyball lesson.
- **Item Discrimination Testing:** The researcher assessed the discrimination power of the scale items by applying the paper-based version to a statistical analysis sample of 90 students. The upper and lower groups method was employed, selecting 27% of the total sample size for each group based on the descending order of scores for each item. Each group consisted of 24.3 students, rounded to 44 students per group. Differences between the scores of the upper and lower groups were statistically tested using the *t-test* for independent samples. The results are summarized in Table 1:

Table 1: Results of the Discrimination Power Analysis for Productive Thinking in Volleyball Scale Items.

Table (1): Results of the Discriminatory Power of the Items in the Productive Thinking Scale in Volleyball

Table (1): Results of the Discriminatory Power of the Items in the Productive Thinking Scale in Volleyball

Item	Group	N	Mean (M)	SD (±)	ttt	Sig	Statistical Significance	Item Discrimination
1	Upper	24	2.71	0.464	10.569	0.000	Significant	Distinctive
	Lower	24	1.29	0.464				
2	Upper	24	2.67	0.482	15.221	0.000	Significant	Distinctive
	Lower	24	1.04	0.204				
3	Upper	24	2.75	0.442	15.56	0.000	Significant	Distinctive
	Lower	24	1.08	0.282				
4	Upper	24	2.83	0.381	15.166	0.000	Significant	Distinctive
	Lower	24	1.17	0.381				
5	Upper	24	2.79	0.415	15.261	0.000	Significant	Distinctive
	Lower	24	1.13	0.338				
6	Upper	24	2.88	0.338	22.755	0.000	Significant	Distinctive
	Lower	24	1.04	0.204				
7	Upper	24	2.63	0.495	13.263	0.000	Significant	Distinctive
	Lower	24	1.08	0.282				
8	Upper	24	2.71	0.464	10.07	0.000	Significant	Distinctive
	Lower	24	1.33	0.482				
9	Upper	24	2.79	0.415	15.261	0.000	Significant	Distinctive
	Lower	24	1.13	0.338				
10	Upper	24	2.92	0.282	18.088	0.000	Significant	Distinctive
	Lower	24	1.17	0.381				
11	Upper	24	2.75	0.442	12.454	0.000	Significant	Distinctive
	Lower	24	1.21	0.415				
12	Upper	24	2.96	0.204	17.18	0.000	Significant	Distinctive
	Lower	24	1.25	0.442				
13	Upper	24	2.83	0.381	18.088	0.000	Significant	Distinctive
	Lower	24	1.08	0.282				
14	Upper	24	2.88	0.338	17.944	0.000	Significant	Distinctive
	Lower	24	1.13	0.338				
15	Upper	24	2.92	0.282	16.678	0.000	Significant	Distinctive
	Lower	24	1.21	0.415				
16	Upper	24	2.71	0.464	12.579	0.000	Significant	Distinctive
	Lower	24	1.17	0.381				
17	Upper	24	2.33	0.482	12.099	0.000	Significant	Distinctive
	Lower	24	1.04	0.204				
18	Upper	24	2.96	0.204	12.1	0.000	Significant	Distinctive
	Lower	24	1.67	0.482				

Here is the well-formatted and translated text:

An item is considered **distinctive** if the significance value (Sig) is **less than** (0.05) at the significance level of (0.05) and with degrees of freedom (46).

The researcher verified the **internal consistency** of the Productive Thinking in Volleyball Scale by calculating **Pearson's simple correlation coefficients** between the score of each item and the total score of the scale. This was done using the same data from the previous application on the construction sample, which consisted of **90 students**. The results are shown in **Table (2)**:

Table (2): Internal Consistency of the Productive Thinking in Volleyball Scale
Table: Correlation Coefficients Between Item Scores and the Total Scale Score

Item	Correlation Coefficient (rrr)	Sig	Item	Correlation Coefficient (rrr)	Sig
1	0.667*	0.000	10	0.756*	0.000
2	0.737*	0.000	11	0.591*	0.000
3	0.654*	0.000	12	0.733*	0.000
4	0.662*	0.000	13	0.589*	0.000
5	0.844*	0.000	14	0.566*	0.000
6	0.761*	0.000	15	0.751*	0.000
7	0.689*	0.000	16	0.548*	0.000
8	0.557*	0.000	17	0.639*	0.000
9	0.604*	0.000	18	0.794*	0.000

- An item is considered **consistent** if the significance value (Sig) is **less than** (0.05) with degrees of freedom (88) at a significance level of (0.05).
- The reliability of the **Productive Thinking in Volleyball Scale** was verified by calculating the simple **Cronbach's Alpha coefficient**, using the same scores from the previous application on the construction sample of **90 students**. The reliability coefficient was found to be **0.859**, confirming reliability at the significance level of (0.05) and degrees of freedom (88).
- The researcher confirmed the suitability of the scale for the research sample by statistically analyzing the scores to determine the value of the normal distribution. This was based on the same scores from the application on the construction sample of **90 students**. The results are presented in **Table (3)**:

Table (3): Final Statistical Parameters and Normal Distribution of the Scale

Construction Sample Size	Number of Items	Total Score	Measurement Unit	Mean (M)	Standard Deviation (SD)	Skewness Coefficient (α)
90	18	54	Score	28.9	4.176	0.182

Notes:

- The distribution is considered **normal and moderate** if the skewness coefficient (α) lies within the range of (1 +) after completing this procedure, the researcher finalized the **Productive Thinking in Volleyball Scale** in its final form (Appendix 1), with a total score ranging from **18 to 54** and a hypothetical mean of **36**.



To measure the accuracy and performance of the serving skill, the researcher adopted a test (Appendix 2), where the students' performance in this test was recorded and evaluated as detailed below.

Development of Educational Exercises Using the Focus Strategy for Serious Creativity in Volleyball Practical Lessons:

1. Content of Educational Exercises:

- The exercises designed for the experimental group included **individual exercises** at a rate of **4–5 exercises** per practical lesson.
- Each exercise lasted between **10–15 minutes**.
- To align with the focus strategy, all students were given **1–2 minutes** for group discussion and dialogue, which was allotted only before the first exercise in the practical session.
- This focused on teaching the underhand serving skill in volleyball.

2. Implementation in Practical Lessons:

- The strategy was applied during the **main section** of the volleyball practical lesson for 4th-grade preparatory students in both the **educational** and **practical** aspects for the experimental group.
- Each lesson was conducted **once a week**, as per the scheduled curriculum, with a total duration of **45 minutes**.
 - The main section lasted **30 minutes**, with the preparatory section lasting **10 minutes**, and the concluding section (**5 minutes**) left for the teacher without researcher intervention.
- The total duration allocated for these strategy exercises was **180 minutes** over the entire series of lessons.

3. Distribution of Lessons:

- A total of **4 practical lessons** were allocated: **3 lessons for skill performance** and **1 lesson for accuracy**.
- Lessons were conducted at a rate of **1 per week**, over a period of **4 weeks**.

4. Execution of Educational Exercises:

The practical application of the focus strategy for serious creativity involved the following activities:

- The teacher listens to students' ideas about the underhand serving skill and its accuracy.
- A visual aid (flex board) is prepared, illustrating the components of the skill in one corner of the volleyball court. Students focus on key points and categorize their ideas about skill execution and accuracy.
- Students exchange ideas on improving their skill execution and accuracy.
- The teacher enhances mental focus by noting important points on the flex board for students to consider during group discussions in a cooperative learning format.
- When inappropriate observations are made, the teacher helps students refine their focus by setting specific goals. Goal-setting aims to generate ideas and improve focus discipline during the strategy's application.

Research Implementation:

After completing the preparation phase, the research experiment began with **pre-tests** at **10:00 AM on Monday, February 19, 2024**.

- The pre-tests included the **Productive Thinking Scale** and the **Accuracy Test for Underhand Serving**, with each student's performance recorded.
- Evaluations were conducted by **three assessors** to measure the technical performance of the skill.

The **focus strategy for serious creativity** was then applied to the experimental group, while the control group followed the conventional method as per their regular practical lessons.

- This phase lasted from **Monday, February 26, 2024**, to **Monday, March 18, 2024**, in the closed gymnasium at Al-Mutafawiqeen High School.
- The experiment concluded with **post-tests** conducted on **Monday, March 25, 2024**.

Data Analysis:

After completing the experiment, the results were analyzed using the **SPSS** software to calculate:

- Percentage
- Mean
- Standard deviation
- **Levene's test** for variance homogeneity
- **t-test** for independent samples
- **t-test** for dependent samples.

Results:

Table (4) illustrates the pre-test results between the experimental and control groups.

		Test and Group	nnn	Mean (M)	Std. Dev. (SD)	(Liven)	t)Sig()Sig	iffer
Productive Thinking in Volleyball	Experimental	34	4.956	28.53	34	1.922	0.170	1.125	0.265	sig
	Control	36	3.881	29.72	36					
Performance of the Serving Skill	Experimental	34	1.274	2.12	34	1.444	0.234	0.121	0.904	sig
	Control	36	1.105	2.08	36					
Accuracy of the Serving Skill	Experimental	34	1.998	13.35	34	0.325	0.571	0.24	0.811	sig
	Control	36	2.158	13.47	36					
	Experimental									

The difference is significant if (Sig) > (0.05) at a significance level of (0.05) and a degree of freedom of (68), the unit of measurement is (degree)

Test and group		Test and Group	Mean (M)	Std. Dev. (SD)	(Live n)	(sig))t((sig)	Difference
Productive	Experimental	Pre	28.53	4.956	12.029	4.957	14.149	0.000	Not significant
			40.56	1.078					
	Control	post	29.72	3.881			0.000		

Thinking in Volleyball			36.31	1.91						Not significant
Performance of the Serving Skill	Experimental	Pre	2.12	1.274	5.941	1.254	27.629	0.000	Not significant	
			8.06	.547						
	Control	post	2.08	1.105	3.75	1.663	13.533	0.000	Not significant	
			5.83	1.108						
Accuracy of the Serving Skill	Experimental	Pre	13.35	1.998	14.441	2.163	38.931	0.000	Not significant	
			27.79	0.77						
	Control	post	13.47	2.158	8.972	2.962	18.178	0.000	Not significant	
			22.44	2.144						

Table (6) shows the post-test results between the experimental and control groups:

Test	Group	nn	Mean (M)	Std. Dev. (SD)	t	Sig	Difference
Productive Thinking in Volleyball	Experimental	34	40.56	1.078	11.382	0.000	Significant
	Group	36	36.31	1.91			
Serving Skill Performance	Experimental	34	8.06	0.547	10.553	0.000	Significant
	Group	36	5.83	1.108			
Serving Skill Accuracy	Experimental	34	27.79	0.77	13.732	0.000	Significant
	Group	36	22.44	2.144			

The difference is significant if (Sig) > (0.05) at a significance level of (0.05) and a degree of freedom of (68), the unit of measurement is (degree)

Discussion:

From reviewing the results in Table (5), it is clear that the students in both research groups (experimental and control) showed improvement in their productive thinking in volleyball, as well as their performance and accuracy in the underhand serve skill, in the post-test compared to the pre-test results. When reviewing the post-test comparison results in Table (6), it is evident that the experimental group outperformed their counterparts in the control group across all dependent variables. The researcher attributes these improvements and the experimental group's superior performance to their application of the Serious Creativity Focus Strategy, which helped the students develop productive thinking geared towards enhancing their skill performance and accuracy. This enabled them to approach skill performance and its accuracy



with deeper thinking, supporting the cognitive structure involved in performing the skill. The students were able to assimilate and connect these details to fully execute the skill as required. The instructional scenarios for each exercise were designed to increase the level of this thinking, considering that each situation demanded diverse solutions. This allowed the students to focus on the details of skill performance, while providing feedback to gather, categorize, and analyze ideas. Students were encouraged to prioritize and select the most important ones to meet the educational scenario's requirements. (Kadhim, 2024) The exercises, using this strategy, simulated the actual conditions of the physical education volleyball lesson, facilitating practice and practical application, compared with the model presented through the flex that contains key points on performance details and overcoming common mistakes. (Kadhim, 2023)

Furthermore, reviewing the performance through group dialogue to increase creativity levels in performance helped focus on spatial accuracy, particularly in the fourth unit, which involved many repetitions during practice. The students relied on comparisons to complete the task according to the model presented through the flex, to minimize common mistakes in skill performance and accuracy. This was further supported through collaborative dialogue based on the correct performance criteria for the underhand serve skill. The Serious Creativity Focus Strategy allows for student collaboration, activating their engagement and enabling them to focus on performance details, thus enhancing practical practice and application. The strategy's elements enable students to both perform and evaluate their skill performance alongside their peers, contributing to achieving the lesson's practical goals in a cooperative, creative environment that emphasizes clarity in presentation, boosting their ability to assess their practice and application of the educational exercises based on the strategy, which is fundamental to the observed improvement. (Kazim et al., 2019)

As stated by Al-Qahtani (2021, p. 186), "Utilizing productive thinking in education leads to a deeper and more comprehensive understanding of the content, transforming knowledge acquisition from a passive mental process into an active one. It aids in better comprehension of the content and connecting its components, leading to more precise and novel ideas and results." Similarly, Capranica & Others (2020, p. 165) state, "When diverse ideas and innovative experiences are shared, an environment conducive to innovation in applying volleyball skills is created, where students can draw inspiration from others' ideas to try new and effective methods." Ribeiro & Others (2021, pp. 161-170) note that "The exchange of knowledge and experiences between learners and teachers involves managing and organizing the transfer of valuable knowledge and experiences among the individuals involved in the lesson, whether they are students or teachers." Moreover, Al-Mutrifi (2018, p. 33) mentions that "The roles of the teacher in activating teaching strategies include being a presenter, observer, stimulator, organizer of the learning environment, facilitator of relationships, and a reference for learning and theory-building."

Furthermore, Harvey & Others (2019, p. 485) highlight that "Group discussions can be organized where learners exchange experiences and advice, with instructors guiding the discussion and providing technical supervision. Team performance indicators can be used and regularly assessed to measure continuous improvement and identify areas needing development." Crotty & Others (2018, p. 619) emphasize that "Shared knowledge can bring together various team members, enhancing their integration." Schunk (2012, p. 113) states, "Information processing theorists focus not on external conditions, but on the mind, which is seen as an information processing system responsible for connecting, arranging, and organizing new knowledge in meaningful ways."



Additionally, Al-Kubaisi & Hasson (2014, p. 111) state that "When learning is active, most students do most of the work, using their minds to study ideas, solve problems, and apply what they've learned. Active learning is fast-paced, fun, and engaging—it is a personal immersion in learning something well, helping them listen, see, ask questions, and discuss with others. Most importantly, students need practice—they explore ideas, try skills, and perform tasks based on their current knowledge or what they need to discover." Carmen & Others (2017, p. 42) assert, "Performance thinking leads to the activation of new connections between neurons, facilitating the brain's ability to make new mental processes, allowing the mind to work more efficiently, widely, and effectively."

Moreover, Mustafa (2019, p. 127) explains, "Teaching motor skills requires continuous assessment and feedback. Students' performance is evaluated, constructive comments are provided, and suggestions for improvement are made to enhance their motor and skill development. Active learning in motor skill learning promotes systematic thinking, developing skills in inference, analysis, and critical thinking through experiments, practical activities, analyzing results, and learning from mistakes. It depends on integrating different skills and developing thinking skills, with students guided to develop plans to achieve goals and apply various skills to attain the desired results."

Conclusions and Recommendations:

1. The productive thinking scale in volleyball is suitable for 4th-year preparatory students and is valid for its intended purpose, with scientific foundations and measurements that ensure its acceptance.
2. The application of volleyball drills based on the Serious Creativity Focus Strategy in practical lessons is appropriate for 4th-year preparatory students.
3. Applying volleyball drills using the Serious Creativity Focus Strategy improves students' productive thinking in volleyball, leading to superior performance compared to peers without it.
4. The application of volleyball drills using the Serious Creativity Focus Strategy enhances the performance and accuracy of the underhand serve skill in volleyball for students who practice it, leading to superior results compared to peers without it.
5. It is essential to incorporate mental measurement, especially productive thinking in volleyball, for each student in practical lessons to support improvement in the performance and accuracy of the underhand serve.
6. It is important not to overemphasize cognitive structure but instead focus on practice and repetition to improve the performance and accuracy of the underhand serve skill through the effective application of the Serious Creativity Focus Strategy in developing the movement programs for this skill and its accuracy.

Appendix (1) Illustrates the Productive Thinking Scale in Volleyball

No.	Statement Items	Response Options
		Always Applies to Me
1	I am able to think of the best way to complete the performance and accuracy of the volleyball serve.	
2	I can utilize the information provided by the teacher and peers to complete the performance and accuracy of the volleyball serve.	
3	I find myself capable of overcoming obstacles in the performance and accuracy of the volleyball serve.	
4	I accept ideas that help me complete the performance and accuracy of the volleyball serve.	
5	I find myself distinguished in thinking about how to perform and ensure the accuracy of the volleyball serve.	
6	I possess the ability to predict my results in the performance and accuracy of the volleyball serve.	
7	I can explore new movements that support my performance of the volleyball serve and its accuracy.	
8	I can utilize my previous thinking and information about the performance and accuracy of the volleyball serve when applying new exercises for this skill.	
9	I can perceive the details of the performance and accuracy of the volleyball serve.	
10	I have rational ideas about overcoming common mistakes in the performance and accuracy of the volleyball serve.	
11	I care about listening to my peers' guidance after performing and ensuring the accuracy of the volleyball serve.	
12	I can direct my thinking to correct my performance of the volleyball serve and its accuracy.	
13	I can diagnose my mistakes instantly when performing the volleyball serve and its accuracy.	
14	I am aware of what I perform in the sections of the volleyball serve and its details.	
15	I aim to generate new ideas that facilitate the performance and accuracy of the volleyball serve.	
16	I can evaluate my overall performance of the volleyball serve and its accuracy.	

No.	Statement Items	Response Options
17	I trust my thinking, which makes it easier for me to perform and ensure the accuracy of the volleyball serve.	
18	I can evaluate my peers at each stage of performing and ensuring the accuracy of the volleyball serve.	

Appendix (2) Illustrates the Tests of Performance and Accuracy of the Underhand Serve in Volleyball

First: Accuracy Test of the Serve to a Divided Court (4 Zones) (Abbas et al., 2012, p.33)

- **Objective of the Test:** Measure the accuracy of the underhand serve.
- **Tools:** A volleyball court divided into areas, each marked with a number indicating the score value for that zone, three volleyballs, as shown in Figure (3).
- **Performance Specifications:** The test subject stands in the designated area to perform the serve and must execute the serve legally, ensuring it crosses the net into the court.
- **Conditions:**
 - The test subject performs three warm-up serves before starting the actual test.
 - The test subject completes 10 serve attempts.
 - Foot faults and net errors are scored as zero.
- **Scoring:**
 - The total score is the sum of the points corresponding to the zones where the ball lands.
 - If the ball touches a court line, the higher score of the adjacent zone is awarded. The maximum score is 40 points.
- **Unit of Measurement:** (Points).

Figure (1) Illustrates the Plan for the Serve Accuracy Test

Second: Technical Performance Test of the Serve (Hassanein, 2001, p.247)

- **Objective of the Test:** Measure the technical performance of the serve.
- **Tools:** A volleyball court and three volleyballs.
- **Performance Specifications:** The test subject stands in the designated area to perform the serve and must execute the serve legally, ensuring it crosses the net into the court.
- **Conditions:**
 - The test subject performs three warm-up serves before starting the actual test.
 - The test subject completes three serve attempts.
- **Scoring:**
 - The performance in the three attempts is evaluated by experts, with the best attempt being considered. The score distribution is as follows:
 - Preparatory phase: 3 points.
 - Main phase: 5 points.
 - Concluding phase: 2 points.
- **Unit of Measurement:** (Points).

Figure (2) Illustrates the Plan for the Underhand Serve Performance Test



References

- Abbas, Najla and others. (2012). Basic principles of volleyball skills and methods of learning them. Iraq. Dar Al-Kutub and Al-Watha'iq.
- Abdul Ali, Aya Hussein, Jabbar, Hasnaa Sattar. (2022). The effect of the court corners strategy (educational pillars) on learning and maintaining the forehand stroke skill in tennis for students. Journal of Physical Education. Volume (34). Issue (3).
- Abu Al-Ela, Hala Saeed Abdel-Ati. (2019). A proposed strategy based on the theory of serious creativity to develop the habits of excellence and future entrepreneurship skills. Alexandria University. Educational Journal. Issue (62). Pp. 84-161.
- Abu Jado, Saleh Muhammad, Noufal, Muhammad Bakr. (2013). Teaching thinking theory and application. Ed. (4). Amman. Dar Al-Masirah for Publishing, Distribution and Printing.
- Al-Jabouri, Aref Hatem Hadi, and Al-Barak, Majd Mumtaz. (2021). Employing the strategy of harvesting ideas in achievement and positive thinking. Amman. Dar Al Manahj for Publishing and Distribution.
- Al-Kubaisi, Abdul Wahid Hamid, and Hassoun, Ifaqa Hajil. (2014). Teaching according to the strategies of the constructivist theory (cognitive and metacognitive). Amman: Dar Al-Shorouk for Publishing and Distribution.
- Al-Masry, Adnan. (2017). The effectiveness of the problem-centered learning strategy in developing productive thinking through the science curriculum. Palestine University Journal for Research and Studies. Volume (7). Issue (2), pp. 259-292.
- Al-Mutafi, Abdul Hussein Saadoun Farih. (2018). The effectiveness of an educational program based on active learning in critical thinking among fourth-grade literary students. PhD thesis. Al-Mustansiriya University. College of Basic Education.
- Al-Qahtani, Rayhana Misfir. (2021). Obstacles to using productive thinking skills in learning the Arabic language among trainees at the Technical College for Girls in Khamis Mushait in the Kingdom of Saudi Arabia. Journal of the Islamic University for Educational and Psychological Studies, Technical College for Girls in Khamis Mushait. Kingdom of Saudi Arabia. Volume (29). Issue (1). Pp. 181-208.
- Al-Sabab, Azhar Mohamed Majeed. (2018). Strategies of serious creativity in developing habits of mind. United Arab Emirates, De Bono Center for Teaching Thinking.
- Ambo Saidi, Abdullah bin Khamis. (2018). Teaching (interventions-models-strategies) with applied examples. Amman. Dar Al-Masirah for Publishing and Distribution.
- Ambo Saidi, Abdullah Khamis. (2018). Teaching (interventions-models-strategies) with applied examples. Amarn. Dar Al-Masirah for Publishing and Distribution.



- Capranica, L., Tessitore, A., Guidetti, L., & Figura, F. (2020). Pedagogical knowledge exchange among youth volleyball coaches. *International Journal of Sports Science & Coaching*, 15(2), 163-172.
- 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), P: 40 - 47.
- Crotty, M., Thornton, J. S., & Abrahams, S. (2018). Playing to the whistle: An exploration of game sense in volleyball. *International Journal of Sports Science & Coaching*, 13(4), 615-622.
- Harvey, S., Pill, S., & Almond, L. (2019). Knowledge management and sport coaching. In *Routledge International Handbook of Sport and Exercise Psychology* (P: 484-496).
- Hassan, Ahmed Maher Anwar, Abdel Majeed, Ali Mohamed, Anwar, Iman Ahmed Maher (2018). Teaching physical education between theory and practice. Cairo. Dar Al Fikr Al Arabi.
- Hassanein, Mohamed Sobhi. (2001). Tests and measurement in physical education. Alexandria. Manshaat Al Maaref.
- Hazza, Dhafer Faraj. (2018). The prevailing mathematical productive thinking in the intermediate stage and the level of its acquisition among first-grade intermediate students. *Journal of the Islamic University for Educational and Psychological Studies*, King Khalid University, Saudi Arabia. Volume (26). Issue (6). p. 110-129.
- <https://cbej.uomustansiriyah.edu.iq/index.php/cbej/article/view/10214/9278>
- <https://cbej.uomustansiriyah.edu.iq/index.php/cbej/article/view/8984/8242>
- Hurson, T. (2008). *Think Better*. McGraw Hill, United States.
- Kadhim, M. J. (2023). Examining The Relationship Between Social Classes And The Culture Of Poverty: A Case Study. *International Journal of Social Trends*, 1(1), 23–27.
- Kadhim, M. J. (2024). Digital Literacy and Its Importance in the Modern Workforce. *International Journal of Social Trends*, 2(2), 44–50.
- Kaufman, James C., and Robert J. Sternberg. (2019). *the Cambridge Handbook of Creativity*, Cambridge University Press. P:1-3
- Kazim, M. J., Zughair, A. L. A. A., & Shihab, G. M. (2019). The effect of zinc intake on the accumulation of lactic acid after cooper testing among football Premier league referees. *Sciences Journal Of Physical Education*, 12(5).
- Mikhail, Amtanius Youssef. (2022). *Developments in psychoanalysis in the twenty-first century*. Beirut. Dar Al-Safa for Printing, Publishing and Distribution.



-
- Mustafa, Muhammad Najib. (2019). Scientific investigation. Edition (3). Riyadh. Al-Rashed Library.
- Najm, Ali Aziz Abdul Latif, and Abdul Karim, Mustafa Hassan. (2022). The effect of tactical exercises specific to playing situations in raising the cognitive efficiency index of some technical skills for volleyball players aged (16-18) years. Journal of the College of Basic Education. Al-Mustansiriya University. College of Basic Education. Issue (118). Volume (29). Pp. 462-480.
- Nouri, Zian Abdullah. (2023). The effect of cross-training in developing some physical abilities on the performance level of some basic skills in volleyball. Journal of the College of Basic Education. Al-Mustansiriya University. College of Basic Education. Issue (118). Volume (29). Pp. 433-455.
- Razouki, Raad Mahdi, and Nabil, Rafiq Mohamed, and Salem Daoud, Dhamia. (2019) Thinking and its patterns. Ed. (4). Beirut. Scientific books.
- Ribeiro, J. N., Mesquita, I., Kannebley, G., & Graça, A. (2021). The Effects of the Game Situations on the Development of Decision Making in Volleyball. Journal of Human Kinetics, 79(1), 161-170.
- Runco, Mark A. (2014). Creativity: Theories and Themes: Research, Development, and Practice, Academic Press.
- Schunk, Dale H. (2012). Learning Theories an Educational Perspective Bosto