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The effect of the progressive inquiry model on creative thinking and learning to perform the smash and court defines skills in volleyball for students

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Abstract

The aim of the research was to prepare educational exercises and employ them using the progressive inquiry model to learn to perform the skills of smashing and defending the court in volleyball for students, and to identify the effect of the progressive inquiry model on creative thinking and learning to perform the skills of smashing and defending the court in volleyball for students. The experimental research method was adopted by designing two equal experimental and control groups with tight control in the pre- and post-tests. The limits of the community of this problem were represented by the fifth-grade preparatory students from the (1 June) Secondary School for Boys for the academic year (2024/2025), numbering (99) students, from whom (66) students were chosen for the research sample, representing (66.667%) of their original community. Then, students from the experimental group and the other control group were chosen from them in equal numbers. (20) students were chosen for the sample of the scientific foundations of the creative thinking test, representing (20.202%) of their original community. The remaining (13) students were also chosen for the exploratory experiment sample, representing (13%) of their original community. (13.131%) of their original community, and after determining the tests of the three dependent variables and completing the preparation of the educational exercises and employing them with the progressive inquiry model, the pre-tests were applied as a start to the research experiment, and then applying the vocabulary of the educational exercises with the progressive inquiry model in practical physical education lessons to the students of the experimental group, while the students of the control group apply the method followed as it is in their practical lessons, and completing this experiment by applying the post-tests, and processing the results by means of the (SPSS) system to be the conclusions and recommendations that preparing educational exercises with the progressive inquiry model in the educational units of practical volleyball lessons is suitable for fifth-grade middle school students, and that applying them in the

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educational units of practical volleyball lessons helps improve the level of creative thinking and helps in learning to perform the skills of smashing and defending the court in volleyball for students who learn with it, and with superiority over students who learn without it, and it is necessary when preparing educational exercises with the progressive inquiry model to give (2) minutes before performing each exercise from them to enable students to investigate and improve creative thinking in the educational units to learn skill performance With volleyball..

Keywords: Progressive inquiry model, Creative thinking, Volleyball skills, Student learning.

Introduction:

The requirement for creativity in thinking about the details of skill performance in volleyball is an inevitable and necessary matter that both teachers and students themselves seek to activate in various educational units in order to meet the requirements of educational situations for exercises to learn advanced or difficult offensive and defensive skills in volleyball, to form a basis for the required learning according to educational and teaching objectives.Thinking about performance helps activate new connections between the learner's neurons, facilitating the creation of new pathways that were previously unavailable. It also helps create new possibilities for further mental work, leading the mind to work with greater potential, greater efficiency, and greater precision) ".Carmen & Other, 2017, p. 42) Creativity is part of the daily routine requirements of every learner. The meanings of ideas can be activated through creative activity, and learners can be trained to enhance their creative abilities and understand the scientific foundations of creativity that enable them to learn creativity) ".Al-Tayti, 2019, p. 52) Creative thinking is also defined as" the mental abilities and skills to generate purposeful ideas that produce distinctive originality, fluency, and flexibility. This type of thinking relies on an individual's prior cognitive experience and his or her ability to break free from the boundaries of what is expected and taken for granted by others) ".Sarhan, 2023, p. 62“)Creative thinking is one of the most important forms of thinking that countries seek to develop in their students, through educational institutions, as a result of current changes and the anticipation of a rapidly changing future) ".Al-Naoushi, 2019, p. 127)Creativity is divided into levels according to the degree of complexity, and according to the degree of originality and value of the final production of creative ideas. Creativity falls into two types of levels: (Al-Harthi, 2006, p. 92) Peak level: This is the level of creativity that is distinguished on a global level, such as Nobel Prize winners. A creative person at this level must produce a distinguished production on a global level, not just on the local level. The normal level: This is a level that no human being is without. Education and teaching must take into account and encourage normal creativity, and adopt relative creativity rather than the absolute concept of creativity. The researcher believes that it is possible to employ educational situations towards the reciprocal action of creative thinking after it is a necessary application of these situations, and a goal that must be improved for learners in practicing exercises by applying them in these educational units. This requires focusing on teaching the body and mind together in each of these situations. “Educational programs are particularly important in expanding scientific, intellectual, and cultural horizons, providing learners with knowledge

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and experience, creating cooperation, and opening horizons for expressing urgent needs and demands. On the other hand, they develop self-reliance and self-confidence through implementing an activity or part of the program's activity, which encourages greater and more difficult work) ".Al-Karkhi, 2014, p. 28) "The inquiry method is considered one of the modern effective methods in developing the student's thinking, as it gives him the opportunity to be able to learn and its processes as if he were behaving like a small scientist in his research, as its basis is self-learning that works to provide the opportunity for students to practice mental processes and skills of investigation and discovery on their own, which works to build the student's personality and self-respect, enhance his self-confidence and increase his ambition ".)Al-Jabouri, 2012, p. 128) The Progressive Inquiry Model is defined as" a teaching-learning framework to help students discover and solve mathematical problems collaboratively through clear steps that include: establishing context (i.e., planning and defining the purpose of knowledge study) , posing and preparing questions, constructing working theories, critical evaluation, in-depth and broad searches for knowledge, generating sub-questions, developing new theories, and distributed expertise) ".Mahdi, 2019, p. 177) It also" relies on the progressive inquiry model of shared experience and collaborative work to build knowledge and inquiry by setting the context using questions, explanations and theories so that learners search for research questions. The progressive inquiry model is concerned with studying the cognitive content presented to learners by analyzing and interpreting it, focusing on different thinking skills while studying the information contained in the content and expressing an opinion on it and evaluating it) ".Muukonen & Other, 2019, P: 531) The Progressive Inquiry Model is an educational framework that focuses on research-based learning and inquiry, enabling learners to build knowledge by asking questions, developing hypotheses, and testing them in a collaborative environment. The model aims to promote critical thinking. It is a methodological framework that relies on formulating questions as a primary means of guiding scientific research and inquiry processes, with the aim of promoting critical thinking and knowledge construction. (Mustafa, 2024, p. 99) The researcher believes that learners, by nature, when learning volleyball skills, seek to discover knowledge related to performance by practicing investigation processes about this knowledge, whether by asking the teacher or peers, or by applying the performance of each skill and internal investigation about what was done of this performance in a way that is consistent with the requirements of the correct model for each skill. "There is no motor learning of performance or skill unless there is organized knowledge about this performance based on the brain's work in interpreting stimuli through mental processes that draw motor programs in memory in a manner that suits the level of abilities or capabilities that the learner possesses, so that the work or applications are directed towards developing and improving what he possesses, and helping him draw motor programs in a manner that matches the model required to be reached through activating the comparison system in motor control, so that the cognitive structure is targeted in an applied manner, meaning learning by doing or learning by actually applying what the learner acquires of knowledge) ".Al-Bayati 2023, p. 18) "Information processing theorists and scientists are not concerned with external circumstances, but rather with the mind, which is the information processing system responsible for linking new knowledge to previous knowledge, arranging

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it, organizing it, and making it meaningful) ".Schunk, 2012, p: 113) Because" the teacher, through his style and method, is able to create an educated generation characterized by scientific thinking based on observation and analysis, and thus be able to confront the era of globalization, the era of technology, the Internet, and the constant conflicts that touch the core of the educational project with regard to its goals and strategies) ".Al-Ajrash, 2014, p. 13) It is also" an application of the progressive inquiry model during teaching that contributes to making students more focused and responsible, and provides them with clear language that helps them develop their mental skills. It allows them to lead their learning, make decisions, make sound judgments, organize thought processes, enhance and improve learning abilities, develop the ability to express themselves well and creatively, and help develop a neural network for thinking in the brain) ".Muhammad, 2021, p. 39) Likewise" ,skill performance is not measured by the quantity of what you memorize, but rather by the quantity that is symbolized, stored, and easily retrieved as quickly and efficiently as possible. Quality refers to the ability to retrieve the required information and the crisis in solving the problems that the individual faces, and this can only be achieved through the presence of thinking that activates it) ".Omar and Ahmed, 2021, p. 8) After this detailed digression of thinking, investigation, and skill performance in volleyball, it is necessary to continue updates to support the cognitive structure of learners and increase their ability to perform difficult skills in volleyball, especially those that require motor abilities supported by practice and repetition of motor programs drawn in the brain. This, in turn, requires the learner to continue researching and exploring what achieves these demands. Perhaps progressive investigation is one of the most important things that provide cognitive enrichment in the skill, as the problem of the research lies in the researcher's observation of the clear weakness in the motor learning process for the offensive and defensive skill under investigation, represented by the crushing strike and defending the field, which require the learner to be creative in learning or mastering them in a way that suits their specificity in volleyball. Therefore, the researcher decided to delve into an experiment with the progressive investigation model in an attempt to help students raise the level of their skill performance in these two skills in volleyball as an attempt to support the scientific efforts made in this regard. The importance or usefulness of this research is in two directions, theoretical and applied. The theoretical direction is that it may benefit The results support the knowledge of physical education teachers about the educational models that can be employed in volleyball educational units. The practical importance is determined by the fact that its results may be useful in increasing the ability of players or students to perform correctly according to the correct model for each of the two skills under study. The aim is to prepare educational exercises and employ them using the progressive inquiry model to learn to perform the smash and field defines skills in volleyball for students, and to identify the effect of the progressive inquiry model on creative thinking and learning to perform the smash and field defines skills in volleyball for students. Based on what was stated in the study problem and in order to achieve its objectives, the researcher assumed that there are statistically significant differences between the results of the tests of creative thinking and learning to perform the smash and field defines skills in volleyball before and after the experimental and control research groups, and there are statistically significant differences

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between the results of the experimental and control research groups in the tests of creative thinking and learning to perform the smash and field defines skills in volleyball after.

Method and procedures:

The research problem required that the researcher adopt the experimental research method by designing two equivalent experimental and control groups with tight control in the pre- and post-tests ،.The boundaries of this problem's community were represented by the fifth-grade middle school students from (June 1) Secondary School for Boys, within the formations of the Baghdad Karkh II Education Directorate for the academic year (2024/2025), who continued with the morning attendance for volleyball lessons, numbering (99) students, distributed by nature in equal numbers into three study sections: (A), (B), and (C). The research sample was randomly selected from these sections (B and (C), so that its number reached (66) students, representing (66.667%) of their original community. Then, students from one of the sections were selected by a simple random method to be the experimental group from section (B) and the other from section (C) as a control group, with an equal number from both sections (33) students. Also, (20) students were selected from section (A) for the sample of scientific foundations for testing creative thinking, representing (20.202%) of their original community. From this section, the remaining (13) students were selected for the sample. The exploratory experience is (13.131%) of their original community.

I use the Torrance Test of Creative Thinking .(Torrance Tests of Creative Thinking - TTCT) (Abdul Nour, 2005, p. 45), which is considered useful for educational, employment and research purposes. This test provides several ways to measure various aspects of creativity, and thus meets the specificity of the current research. To obtain apparent validity, this scale was presented to (19) experts using a paper questionnaire, and they agreed on it at a rate of (100%) without any modifications, deletions, combinations or additions to its paragraphs. Then it was applied to (20) students from the scientific foundations sample to verify the reliability using the (Cronbach's Alpha) method, which reached (0.849) at a significance level of (0.05), and a degree of freedom of (18), so that the test acquires the scientific foundations and coefficients for its acceptance as a mental measurement tool in this research with a total score ranging from (50-200) that includes the components of creative thinking (Appendix 1.(

To measure the performance evaluation of the two skills of smashing and defending the field, each student was photographed in the two tests, and the tester's performance evaluation was approved, and each was measured out of (10) points according to the evaluation form presented to (3) experts, by distributing the performance test score as follows:

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Appendix (2) and.(3)

Preparatory section: its grade is.(3)

Main section: its grade is.(5)

Final section: Its grade is.(2)

After determining the tests for each of the three dependent variables, the researcher proceeded to prepare educational exercises to employ them with vocabulary in the progressive inquiry model in the lesson, adopting the applied foundations of constructivist theories in practical lessons in motor learning.

Considering that“ group sessions can be organized where learners share experiences and advice, teachers can guide the discussion and provide technical supervision, and team performance indicators can be used and regularly evaluated to measure continuous improvement and identify areas for development) .”.Harvey & Other, 2019, P: 485(

The duration of each of these lessons was (45) minutes, of which the main section, which lasted (30) minutes, was invested to apply this model under study, and the rest of the sections of the unit were left to their teacher without any intervention from the researcher, represented by the preparatory section (10) minutes, and the final section (5) minutes.

(4) practical lessons were allocated for each skill, and continued for (8) consecutive weeks, so that the total duration for the students to apply exercises using the progressive inquiry model was (240) minutes of the total lesson time.

The vocabulary of this model is applied in the main section of both the educational and practical aspects of the practical lesson for the students of the experimental group at a rate of (1) lesson per week according to their schedule in the curriculum prescribed.

The content of the educational exercises that were employed in the vocabulary of the progressive inquiry model included a rate of (4) educational exercises in one practical lesson, with a time of (6) minutes for each exercise.

The researcher employed vocabulary in the progressive inquiry model in the education that the students received in the educational aspect, and in the educational exercises in the applied aspect of the practical lesson, after the teacher divided his students into four groups, as follows:

Preparing the context for the practical lesson: The teacher sets the goal of knowledge of skill performance in the educational part of the main section of the practical lesson, and guides the students on how they plan to achieve the performance of the specified skill of the smash and field defines skills in practice and practical application later. The teacher, with the participation of the students of the four cooperative work groups in the experimental group, creates an appropriate context for understanding the details of the performance with the help of addressing the presented model and continuing it in the practical lesson, taking into account

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the vocabulary and specificity of the progressive inquiry model and its requirements by exchanging tasks between students in the applied part of the practical lesson.

Preparing and completing questions: The teacher directs a set of questions about the knowledge and information provided to the students regarding the performance of one of the two skills of smashing and defending the field specified in the lesson, and trains the students of each of the four cooperative work groups in the experimental group on how to think and deal with questions of the type) (Why? What? How?) Discuss them in the educational part of the main section of the practical lesson.

Preparing practical applications for educational situations: Here the practical side of the lesson begins, as the teacher asks a question about what was presented to the students in the educational side regarding the performance of one of the two skills of smashing and defending the field specified in the lesson, and gives them (1) minute to stimulate the students 'thinking about how to answer, so that the students of each of the four cooperative work groups in the experimental group formulate hypotheses and put interpretations for them, before the skill performance, and they can refer to the model presented in the lesson to search for the answer to this question before performing each educational exercise so that all answers and performance are distinguished by creativity.

Teaching critical evaluation of skill performance: Students in each of the four cooperative work groups in the experimental group identify the strengths and weaknesses of the various hypotheses and explanations developed to answer the question posed, and evaluate the method they used to arrive at the hypotheses and explanations about the details of the performance sections of one of the two smash and field defines skills identified in the lesson.

Teaching deep and broad research into knowledge and skill performance: Here, a comparison system is activated for each student in each of the four cooperative work groups in the experimental group regarding the performance of one of the two skills of smashing and defending the court specified in the lesson and what should be done in comparison with the details of the skill sections in the model presented in the lesson and the exchange among them regarding knowledge of correct performance.

Teaching how to generate sub-questions about knowledge and skill performance:

Students in each of the four cooperative work groups in the experimental group turn the main question posed by the teacher into more detailed sub-questions about the skill performance of one of the two skills of smashing and defending the court specified in the lesson to help them research and investigate to answer the main questions for the skill performance sections specified in the lesson.

Developing knowledge applications for skill performance:

Students in each of the four cooperative work groups in the experimental group monitor their skill performance results. All participants must have easy access to the results of this

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performance for one of the two skills, smash and defend, specified in the lesson, making the development of interpretations accessible to all students in the experimental group.

ü **Distribution of knowledge experiences by skill performance:** This is done by assigning roles to the students in each of the four cooperative work groups, assigning each student a specific task, after which they meet for discussion. Finally, the students evaluate each student's performance and share their knowledge of performing one of the two smash and field defense skills specified in the lesson.

"During the inquiry method, students are distributed into small groups that rely on the use of research, investigation, group discussions, and cooperative planning. Each group consists of (3-6) members. The topic to be taught is divided into groups. Then, each group divides its sub-topic into individual tasks and duties that the group members work on. Then, the group prepares and brings its report for discussion and presents the results to the entire class. The team is evaluated in light of the work it has done and presented) ".Kariman, 2012, pp. 159-160)

After the researcher finished this preparation, and prepared the creative thinking test and the requirements for the two skill performance tests, she proceeded to apply the exploratory experiment on (13) students to identify the obstacles expected to occur on Tuesday, corresponding to the date (11/2/2025), in the closed hall of the (1 June) Secondary School for Boys. The researcher did not encounter any obstacles worth mentioning .Then, the pre-tests were applied as a start to the research experiment at exactly nine o'clock in the morning on Wednesday, corresponding to the date (12/2/2025), by applying the (Torrance) test for creative thinking and then applying the two skill performance tests for each of the two skills of smashing and defending the field in volleyball, based on their perceptions for each of the students of the two research groups and presenting it to three evaluators. Then, the educational exercise vocabulary was applied with the progressive inquiry model in practical physical education lessons on the students of the experimental group. As for the students of the control group, they apply the method followed as it is in their practical lessons, for the period from Thursday, corresponding to the date of ... (2/14/2025), until Thursday corresponding to the date of (4/4/2025), in the closed hall of (June 1) Secondary School for Boys, and the completion of this experiment by applying the post-tests on Sunday corresponding to the date of.(2025/6/4)

After the research experiment was completed, the results were processed using the SPSS system to extract the percentage, arithmetic mean, standard deviation, homogeneity of variance test (Liven), t-test for unrelated samples, and t-test for related samples.

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Results:

Table (1) shows the results of the pre-tests between the two research groups.

Scale, tests, and group		N	Q	±A	Liven	Say	t	Say	the difference
creative thinking	empiricism	33	87.06	7.652	2.984	0.089	0.667	0.507	Not significant
	The office r	33	85.91	6.302					
Performing the smash hit skill	empiricism	33	2.45	1.543	2.544	0.116	0.074	0.941	Not significant
	The officer	33	2.42	1.768					
Performing the skill of defending the field	empiric	33	3.64	1.388	3.4	0.07	0.871	0.387	Not significant
	The officer	33	3.3	1.704					

Unit of measurement (degree), significant difference: (Sig) (0.05) < at a significance level of (0.05) and degrees of freedom of(64)

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Table (2) shows the results of the pre- and post-tests for the two research groups.

Scale and tests	The group	comparison	Q	±A	So	A F	t	Say	the difference
creative thinking	Experimental(33)	previous	87.06	7.652	29.273	7.674	21.912	0.000	Dal
		the next	116.33	2.026					
	Officer(33)	previous	85.91	6.302	20.939	8.112	14.828	0.000	Dal
		the next	106.85	7.076					
Performing the smash hit skill	Experimental(33)	previous	2.45	1.543	5.152	1.698	17.43	0.000	Dal
		the next	7.61	0.704					

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Performing the skill of defending the field	Officer(33)	the next	6.33	1.708	3.03	2.543	6.845	0.000	Dal
		previous	3.3	1.704					
	empiricism (33)	the next	9.03	0.883	5.394	1.56	19.862	0.000	Dal
		previous	3.64	1.388					
	Officer(33)	the next	5.24	1.226	2.818	2.007	8.066	0.000	Dal
		previous	2.42	1.768					

Unit of measurement (degree), significant difference: (Sig) (0.05) < at a significance level of (0.05) and a degree of freedom of n-1 for each group.

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Table (3) Shows the results of the post-tests between the two research groups.

Scale tests and group		N	Q	±A	)t(	)Say(	the difference
creative thinking	empiricism	33	116.33	2.026	7.403	0.000	Dal
	The officer	33	106.85	7.076			
Performing the smash hit skill	empiricism	33	7.61	0.704	9.606	0.000	Dal
	The officer	33	5.24	1.226			
Performing the skill of defending the field	empiricism	33	9.03	0.883	8.058	0.000	Dal
	The officer	33	6.33	1.708			

Unit of measurement (degree), significant difference: (Sig) (0.05) < at a significance level of (0.05) and degrees of freedom of(64)

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Discussion:

From reviewing the results of Table (2), it is clear that the students of the two research groups improved their post-test results for each of the three dependent variables compared to what these results were in the pre-tests. From reviewing the post-comparison results in Table (3), it is clear that the students of the experimental group outperformed the students of the control group in each of these three dependent variables. The researcher attributes the emergence of these results to their application of educational exercises using the progressive inquiry model in the educational units of practical volleyball lessons and their good use in the educational situations of this lesson, which proved their suitability for the age and gender of the fifth-grade middle school students by good use of the number of repetitions, and the opportunity for each learner to practice and apply by relying on the knowledge of performance that he obtains through progressive inquiry in researching the details of skill performance, and what the motor task requires to reach the desired match for the model presented to them, which represents the correct performance of each of the two skills studied in volleyball. The good distribution of groups in the experimental group and practical applications of the fair elicitation model also helped in preparing the context of the practical lesson: preparing questions. And its fulfilment, preparing practical applications for educational situations, teaching critical evaluation of skill performance, teaching deep and broad research on knowledge of skill performance: teaching the generation of sub-questions on knowledge of skill performance, developing applications of knowledge of skill performance, and distributing experiences of knowledge of skill performance in which the researcher took into account the capabilities of each of the fifth-grade middle school students and their level of ability to perform through practice and application, which is the basis for improvement in this type of thinking, and this improvement in the performance of each of the two skills under study, considering the activation of the cognitive aspect and its good investment in adopting knowledge of performance, which had a clear impact on the results of improvement and excellence for students in the control group.(Moayd et al., 2019)

"Inquiry-based learning enables learners to engage in questioning and problem-solving. Learners acquire knowledge through inquiry, which is achieved by engaging in inquiry activities, connecting knowledge to real-life phenomena, applying knowledge to solve problems, and collaborating with others in seeking solutions to problems) ".Muukonen & Other, 2019, P: 531)

It also" encourages learners, through the progressive inquiry model, to ask precise investigative questions that challenge their current knowledge and push them to discover concepts in organized and creative ways. Formulating questions is the starting point in this model, as they are linked to existing concepts and information to develop testable hypotheses) ".Mustafa, 2024, p. 99)

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It also“ promises, through the progressive inquiry model, an educational and learning framework that helps learners acquire various knowledge, values, and skills so that they can face the challenges and problems of life in their community) ”.Abdullah, 2019, p. 178)

It also" encourages active learning in learning motor performance skills, systematic thinking, and the development of deduction, analysis, and critical thinking skills, through conducting experiments and practical activities, analyzing results, and learning from mistakes. It relies on the integration of different skills and the development of thinking skills) ".Mustafa, 2019, p. 127)

“Good learning that is based on systematic foundations leads to an increase in the level of thinking, and thinking is an important aspect of mental cognitive processes. Therefore, every aspect of thinking is important in absorbing knowledge related to this aspect) ”.Abdul Hadi and Ayyad, 2009, pp. 63-64)

"The environment surrounding the learner clearly influences, or perhaps determines, most of his thinking. The more psychologically healthy the environment is, the sounder thinking will be a supportive outcome of it) ".Mikhail, 2022, p. 42)

"Active learning is also an application in teaching motor skills in sports. It is done through the use of several methods and strategies, including having students observe a specific motor skill in sports, observe how it is performed, and then attempt to perform it themselves. Students are divided into small groups, and each student practices performing it. They then exchange experiences and feedback on how to perform it and improve it. They then design projects that include exchanging experiences and feedback on how to perform it and improve it, by playing games that include effective application. Then, experiences and feedback on how to perform it and improve it are exchanged) ".Brooker & Butterworth 2019, 2)

"Training and practicing a specific skill within a motor task leads to increased experience and development in skill performance. Therefore, practice is the most important variable in the learning process for complex and even simple skills) ".Matanesh 2020, p. 25)

Conclusions and recommendations:

1-The development of educational exercises using the progressive inquiry model in the educational units for practical volleyball lessons is suitable for fifth-grade middle school students.

2- Applying educational exercises based on the progressive inquiry model in the educational units of practical volleyball lessons helps improve the level of creative thinking about volleyball among students who learn with it, and outperforms students who learn without it.

3-The application of educational exercises using the progressive inquiry model in the educational units of practical volleyball lessons helps students who learn to perform the volleyball smash skill better than students who learn without it.

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4-The application of educational exercises using the progressive inquiry model in the educational units of practical volleyball lessons helps students who learn to perform the skill of defending the volleyball court better than students who learn without it.

5-It is necessary when preparingEducational exercises using the progressive inquiry modelGive (2) minutes before performing each exercise to enable students to investigate and improve creative thinking in the educational units for learning skill performance in volleyball.

Appendix (1) explains the creative thinking test:

Torrance Test of Creative Thinking (TTCT)

Test preparatory stages:

1- Work on mental training of the brain:

2-Exposure to new ideas:

3-Ensure that the test subject is in a good and relaxed psychological state:.

4- Test components:

Divergent Thinking:

Fluency: Measures the number of different ideas a tester can generate.

Flexibility: It measures a person's ability to quickly change their mind and switch between different ideas.

Originality: It measures the uniqueness and distinctiveness of ideas.

Elaboration: Measures the extent to which ideas are detailed and developed.

Convergent Thinking: Measures the ability to find a single correct solution to a given problem using logical and analytical thinking.

Types of exercises in the test:

1-Drawing exercises:

The test subject is given a simple form and asked to complete the drawing in creative ways..

Example: Presenting a blank circle shape and asking the tester to complete it to draw something meaningful..

2- Word exercises:

The test subject is asked to write as many unconventional uses as possible for certain objects..

Example: List as many new uses for bricks as possible.

3-Story scenarios:

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The tester is given the beginning of a story and asked to complete it in creative ways..

Example" :John woke up to find that everything in his house had changed"...".

4-Brainstorming Challenges:

A specific problem is presented and the tester is asked to come up with multiple creative solutions.

Example: How can we improve transportation efficiency in the city?

How to evaluate:

Answers are evaluated based on their number, variety, originality, and detail.

A specific scale is used to rate each aspect of creativity.

Appendix (2) explains the technical performance test for the smash skill: (Al-Samarra'i, 2002, p. 56)

Test objective: To measure the performance of the smash skill.

Equipment: (3) volleyballs, a volleyball court, and two mattresses placed in a (3×3) planned area as shown in Figure.(1)

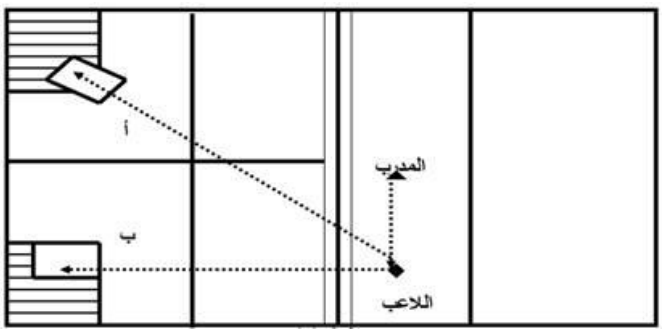
Performance and scoring specifications: The examinee's performance in the three attempts is evaluated by experts, and the grade distribution is as follows:

Preparatory section: its grade is.(3)

Main section: its degree is.(5)

Final section: Its grade is.(2)

Unit of measurement: degree.



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Appendix (2) explains the technical performance test for the skill of defending the field: (Hassanin and Abdel Moneim, 2004, 245)

Test objective: To measure the accuracy of the skill of defending the field.

Tools: Legal volleyball court, legal volleyballs, colored tape (5 cm wide), measuring tape, high chair, as shown in Figure.(2)

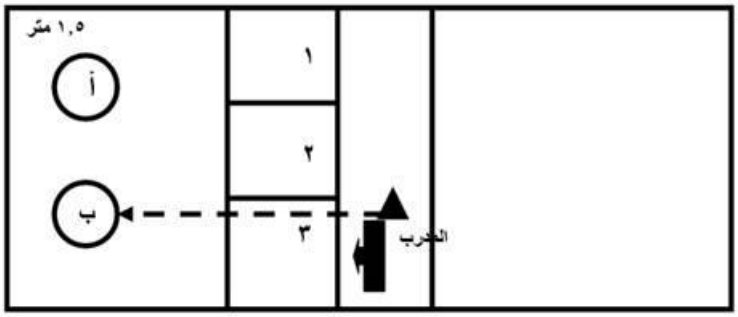
Performance and scoring specifications: The test taker's performance in the three attempts is evaluated by experts, and the grade distribution is as follows:

Preparatory section: its grade is.(3)

Main section: its degree is.(5)

Final section: Its grade is.(2)

Unit of measurement: degree.



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