



The effect of the beehive strategy on deliberate thinking and learning the setting skill of volleyball among female students at the College of Physical Education and Sports Sciences for Woman

El efecto de la estrategia de la colmena en el pensamiento deliberado y el aprendizaje de la habilidad de colocación del voleibol entre estudiantes femeninas en la Facultad de Educación Física y Ciencias del Deporte para Mujeres

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Abstract

Objective: Develop a deliberate thinking scale for the setting skill in volleyball for second-year female students in the College of Physical Education and Sports Sciences for Woman.

Research methodology: The researchers used the experimental approach, employing a two-group approach (pre-test and post-test), to suit the nature of the research. The research community comprised (65) second-year female students from the College of Physical Education and Sports Sciences for Woman at the University of Baghdad for the academic year 2024-2025. The research sample was randomly selected, with (15) students in Section A, the experimental group, and (15) students in Section B, the control group. This group represented (46%) of the students. The sample for constructing the scale comprised (134) female students, selected from second-year students in the Colleges of Physical Education at Al-Mustansiriya University, Basic Education, and Al-Farahidi University, for the purpose of constructing the scale, noting that they were of the same age and educational level. The exploratory research sample comprised (15) female students from outside the main experimental sample and from the College of Physical Education and Sports Sciences for Woman.

Result: The beehive strategy helped improve coordination and interaction of students with each other in the cells within one group in the practical volleyball lesson to build the spirit of one team in the atmosphere of the practical lesson whose educational tasks for each skill exercise were graded from easy to difficult in an atmosphere of enhancing teamwork and improving communication between students with this performance, and developing focus while dealing with the challenges of performing each educational exercise for the skill of setting.

Conclusions: The implementation of the beehive strategy had an impact on learning the skill of setting, through improved performance among

Keywords

Beehive strategy; deliberative thinking.

Resumen

Objetivo: Desarrollar una escala de pensamiento deliberado para la habilidad de colocación en voleibol, dirigida a estudiantes de segundo año de la Facultad de Educación Física y Ciencias del Deporte para Mujeres.

Metodología de la investigación: Los investigadores utilizaron un enfoque experimental, con dos grupos (pretest y postest), para adecuarse a la naturaleza de la investigación. La comunidad de investigación estuvo compuesta por 65 estudiantes de segundo año de la Facultad de Educación Física y Ciencias del Deporte para Mujeres de la Universidad de Bagdad, durante el curso académico 2024-2025. La muestra de la investigación se seleccionó aleatoriamente: 15 estudiantes en la Sección A (grupo experimental) y 15 en la Sección B (grupo de control). Este grupo representó el 46% del alumnado. La muestra para la construcción de la escala estuvo compuesta por 134 estudiantes, seleccionadas entre estudiantes de segundo año de las Facultades de Educación Física de la Universidad Al-Mustansiriya, Educación Básica y la Universidad Al-Farahidi, teniendo en cuenta que tenían la misma edad y nivel educativo. La muestra de investigación exploratoria estuvo compuesta por 15 estudiantes mujeres, ajenas a la muestra experimental principal y pertenecientes a la Facultad de Educación Física y Ciencias del Deporte para Mujeres.

Resultado: La estrategia de colmena ayudó a mejorar la coordinación e interacción de las estudiantes entre sí en las celdas de un grupo durante la clase práctica de voleibol, fomentando el espíritu de equipo en el ambiente de la clase práctica. Las tareas educativas para cada ejercicio se clasificaron de fácil a difícil, en un ambiente que fomentaba el trabajo en equipo y la comunicación entre las estudiantes con este desempeño, y desarrollaba la concentración al afrontar los desafíos de cada ejercicio educativo para la habilidad de colocar.

Conclusiones: La implementación de la estrategia de colmena influyó en el aprendizaje de la habilidad de colocar, mediante una mejora en el desempeño entre las estudiantes.

Palabras clave

Estrategia de colmena; pensamiento deliberativo.

Introduction

As a result of the technological development that included all areas of life, including scientific fields, many educational strategies have emerged Aziz (2020) in the field of teaching and motor learning methods that call for activating the student's role in the educational process more on the one hand, and on the other hand, seek to have the student interact with his peers in all forms of interaction, even intellectual ones. In order to reach this goal, it has become necessary to search for new strategies for employing them as the correct way to achieve these goals, based on the principle that the teaching process is the basis for achieving the goals of the educational process Adham & Al-Zuhairi (2022).

Believes that the teaching process is a fundamental pillar of the educational process through which desired changes are made in the behavior of individuals and the acquisition of knowledge, values, habits and other behavioral patterns. Through this, we can create a conscious generation capable of successfully leading the educational process by raising the role of physical education by employing all possible mechanisms and tools that contribute to achieving the goals of this process. This is what (Najlaa Abbas et al. (2023) sees, as she emphasizes the pioneering role of sports, which is reflected in public health and in creating a distinctive personality that possesses many Successful personal specifications in society and all of these principles are the basis for the teaching process in various games and sports activities, especially volleyball and its uniqueness in performing its skills that require collective harmony between members of the same team Radhi & Obaid (2020). This requires research into new educational strategies, models, methods, approaches and means to meet the challenges of the global level, such as increasing the amount of information and benefiting from the developments that occur in the field of education. The applied aspect of the educational process is the most important aspect, as through it knowledge is transferred and students acquire information and integrated growth in the aspects (cognitive, skill, and emotional) and employing them according to their readiness and abilities. The teaching process is not just a cognitive background for the student, but rather a productive human process that instills values and knowledge in the behavior of students. The modern trend in employing teaching strategies focuses on strategies and methods that depend on the student's abilities and readiness, where the teacher becomes a guide and mentor, taking into account individual differences and meeting their needs in order to achieve learning. Therefore, we find that teachers and instructors are currently directed towards any strategy that gives the student a greater role in the educational process. This is what we find clearly in the beehive strategy over other modern teaching strategies, as it raises motivation and incentive for learning, as it is considered one of the strategies that work to transition from teaching based on presentation and explanation to positive participation in situations and solving problems, Larsson (2023) defined it as a cooperative learning method in which students are divided into small groups, usually consisting of (4-6 students). She also mentioned that this strategy has a major role in stimulating cooperative learning and collective thinking, and raising the level of focus and participation within the classroom. This is consistent with the opinion of, who believes that in this strategy, "the beehive technique creates a vibrant environment for focused discussion, where students work in small groups to build a shared understanding, and then share their ideas with the entire class". This is considered the modern trend in education, as the teacher has become responsible for following up on the student, caring for him, and encouraging him to do schoolwork using methods that help him build self-confidence and make decisions, and develop appropriate solutions to the problems he faces, which helps develop personality and social structure and reach effective participation with colleagues even in the process of thinking and decision-making, as the idea of the strategy depends on. Cooperative learning is a cooperative learning strategy that emphasizes cooperation between teacher and student, cooperation between students in a group and other groups, and positive interaction among them. Following the beehive strategy helps students think, organize their stored information, and create new relationships previously unknown to them Larsson (2023). It allows students to interact continuously with teacher and students, as well as with each other. Deliberative thinking is a type of thinking in which information is collected, critiqued, and generated, and cognitive structures are interconnected Hussein (2025). When an individual faces a problem they must solve, they collect, segment, and then connect information to arrive at the correct solution. The individual visualizes the problem, collects information, and then understands its symbols, attempting to reach a solution. This is reflected in their approach to solving all problems they encounter in daily life. Educators have set specific steps for the beehive strategy, which include: Choosing a topic or question, where the topic or question is presented in the form of a clear question that

stimulates thought, dividing students into groups, usually consisting of 4-5 in each group, allocating a time for discussion between students within each group, from 5-10 minutes, depending on the nature of the activity, each group discusses the topic, where students exchange opinions and reach a conclusion, presenting the results of each group, where a speaker is designated from each group to represent the role of the queen of her hive. The summary of the discussion for her group is presented and a general class discussion led by the teacher, where the discussion is expanded to exchange viewpoints between groups. To implement this strategy, there are several goals, as indicated by Hussein (2025). Where she believes that this strategy makes the learner the focus of the educational process by activating the role of the student. It also gives students the opportunity to discuss and dialogue with their colleagues, in addition to raising the level of participation and interaction within the class, as well as breaking the stagnation and routine in the lesson.

The skill of setting is one of the basic skills in volleyball, which is characterized by difficulty for beginners. Therefore, it requires diverse methods and strategies to learn how to perform it. Cooperation between students is an influential and important factor, given that many of the exercises used in the learning process are paired or group exercises. Furthermore, performance during a volleyball match depends on the performance of the player receiving the serve or defending the court. Furthermore, successful performance also means successful performance of the smash hit. It is therefore the offensive spirit of volleyball. Therefore, learning it requires cooperation between the student, the teacher, and the students themselves through the exchange of knowledge and experiences, the development of common goals, the development of knowledge, and the increase of their knowledge. While working with others, they exchanged ideas among themselves through group discussions. Hence, the importance of this research, which relies on the beehive strategy for deliberate thinking and learning the skill of volleyball setting, emerged to achieve the primary goal of the research.

Research problem

Through the researchers' work as instructors and their experience in the field of volleyball teaching, they noticed that there is a weakness in the process of learning the volleyball setting skill for female students, especially second-year students, as they are beginners, in addition to the specificity of the setting skill, which requires focusing on the details and subtleties of the skill for the purpose of memorization and retrieval. Therefore, the researchers found that it is necessary to diversify and experiment in the teaching strategies in which volleyball skills are taught in general and the setting skill in particular, and to focus on strategies that are based on the learner's abilities through transferring knowledge about the skill, translating it, interacting, thinking, and gathering information about situations so that learning is better and, as a result, the goal is achieved, especially since we are dealing with students who differ in abilities, thinking, and potential. Therefore, the researchers sought to conduct this study in a way that allows for a transition from teaching based on presentation and explanation of the volleyball setting skill to teaching based on participation in different learning situations, by dividing the students into groups, which increases the element of excitement and effective participation and strengthens their self-confidence to feel balanced, cooperative, and happy, which makes them adapt to their peers effectively. Therefore, the researchers decided to experiment A cooperative strategy that suits the skill-based nature of volleyball is an attempt to find solutions to this problem by expanding the circle of active participation in the educational process and assigning students tasks that support the cooperation of members of a single cell by answering questions posed by their teacher and then competing with other cells. This makes the student not merely a recipient, but an active element within the cell. The research aims to prepare practical volleyball lessons using the beehive strategy for second-year students, and to identify the effect of the beehive strategy on the performance of the volleyball setting skill. The problem of the study was defined by answering the following two questions:

- Does the beehive strategy have an impact on the deliberative thinking of second-year students in the College of Physical Education and Sports Sciences for Woman?
- Does the beehive strategy have an impact on the learning of the volleyball setting skill for second-year students in the College of Physical Education and Sports Sciences for Woman?
- What is the degree of deliberative thinking among second-year students in the College of Physical Education and Sports Sciences for Woman?

Research objective

- Develop a deliberate thinking scale for the setting skill in volleyball for second-year female students in the College of Physical Education and Sports Sciences for Woman.
- Develop educational units using the beehive strategy to teach the setting skill in volleyball to second-year female students in the College of Physical Education and Sports Sciences for Woman.
- Identify the effect of the beehive strategy on deliberate thinking and the learning of the setting skill in volleyball for second-year female students in the College of Physical Education and Sports Sciences for Woman.

Research hypotheses

- There are no statistically significant differences between the pre- and post-test results of the deliberate thinking scale and the setting skill for the control and experimental research groups.
- There are no statistically significant differences between the post-test results of the deliberate thinking scale and the setting skill for the control and experimental research groups.

Research fields

- Human field: Represented by second-year female students from the College of Physical Education and Sports Sciences for Woman. University of Baghdad / Al-Mustansiriya / Basic Education / Al-Farahidi.
- Time field: (6/10/2024) to (24/11/2024)
- Spatial field: Volleyball court of the College of Physical Education and Sports Sciences for Woman / Classroom of the Colleges of Physical Education at the University of Baghdad, Al-Mustansiriya, Basic Education, and Al-Farahidi.

Method

Research Methodology

The researchers used the experimental approach, employing a two-group approach (pre-test and post-test), to suit the nature of the research.

Community and sample research

The research community is represented by the second-stage female students of the College of Physical Education and Sports Sciences for Girls / University of Baghdad for the academic year (2024_2025) with a number of (65) female students. The research sample was randomly selected to be Section (A) the experimental group (15) female students and Section (B) the control group (15) female students, and their percentage was (46%). As for the rest of the community members from the two sections, whose number was (35), they were excluded for several reasons, including frequent absences and lack of commitment to the educational program. As for the sample for constructing the scale, their number was (134) female students who were selected from the second-stage female students in the colleges of physical education from Al-Mustansiriya University, basic education and Al-Farahidi for the purpose of constructing the scale, noting that they are from the same age and educational stage. As for the exploratory research sample, it amounted to (15) female students from outside the main experiment sample and from the female students of the College of Physical Education and Sports Sciences for Girls. From all these divisions of the sample, the main sample for the main experiment was randomly selected from Sections (A) and (B). For the sake of clarification, the research sample It was divided into more than one section, namely the construction of the scale, the main experimental sample, and the exploratory experimental sample. This is for the purpose that in scientific research, each of these procedures has a sample specific to it in order for the main experimental sample to remain without any intrusive variables that affect it except for the independent variable.

Methods and Tools Used in the Research

- A volleyball court with legal dimensions. - Video camera (z5)
- Referee whistle
- Camera stand (1)
- Compact discs (CDs) (3)
- Colored adhesive tape (5) cm wide
- Volleyballs (10)
- Compact discs (CDs) (3)

Field Research Procedures

In line with the number of units allocated per semester for the volleyball course for second-year female students in the College of Physical Education and Sports Sciences for Woman, the researchers conducted a technical performance test for the setting skill. Three evaluators evaluated each student's attempts, awarding three points for each expert. The final evaluation score for each attempt is (10) points, distributed among the skill sections: the preparatory section (3) points, the main section (5) points, and the final section (2) points Zidane et al. (2012) see appendix (2).

Procedures for Developing a Deliberative Thinking Scale

The researchers reviewed numerous references, studies, and previous research that addressed deliberative thinking. To their knowledge, they did not find a scale applied to sports. The researchers developed a deliberative thinking scale by defining the purpose of developing the scale. This is the first step in developing the scale, as it allows access to the main ideas. The goal of the scale is to identify the degree of deliberative thinking in the setting skill of volleyball for second-year female students. The researchers then identified the scientific material by reviewing a set of sources, from which they began to adopt the concept of deliberative thinking. In light of the theoretical definition of deliberative thinking, the researchers identified three areas for the scale, namely (the area of perseverance and insistence, the determined strength directed towards the goal, and the depth of self-reflection). In order to identify the validity of the areas, the researchers presented the areas to experts and specialists, numbering (13). Then, the process of collecting and preparing the paragraphs for the deliberative thinking scale was carried out by reviewing the sources and studies specializing in the field of deliberative thinking, where 26 paragraphs were collected, and the paragraphs were distributed over the three areas, with (9) paragraphs for the first area, (9) paragraphs for the second area, and (8) paragraphs for the third area. Then, a questionnaire form was presented, and the Likert method was adopted as a basis for constructing the deliberative thinking scale with a three-scale (always, sometimes, never). Weights (1, 2, 3, 0) were given to the positive paragraphs and (3, 2, 1) for the negative paragraphs. Then, the paragraphs were presented to an Arabic language specialist to verify their integrity. After that, the scale paragraphs, numbering (26), were presented to a group of (13) specialists in measurement, evaluation, and sports psychology. After that, the questionnaires were collected and the experts' opinions were analyzed using the Chi-square, where it was found that (25) paragraphs had obtained complete agreement on the validity of the deliberative thinking scale. The researchers statistically analyzed the experts' opinions and used the percentage to indicate agreement on the areas consisting of (25) paragraphs. The exploratory experiment of the deliberative thinking scale was conducted on a sample of (15) female students in the college classroom. The time taken to answer the paragraphs was verified as (5-10) minutes, and the instructions were clear and understandable. The deliberative thinking scale also required content validity to verify its validity, in addition to extracting apparent validity by presenting it to a group of experts and specialists. Thus, apparent validity and formative validity were extracted.

This is consistent with the opinion of Al-Obaidi (2021), who believes that "the scale or test is valid in appearance and logic if the arbitrators agree on everything it contains of sections, fields, dimensions, paragraphs and instructions by a percentage of (80%) or more to explain this percentage by more than (50%) of the variance in the opinions of the arbitrators." As Qatami & Qatami (2020) see it, apparent validity is "that the scale measures what it was designed to measure, or what confirms that the scale achieves the purpose for which it was designed, by presenting the scale to a group of specialists related

to the subject that is to be measured, and based on the agreement of those experts we arrive at the validity of the scale.”

The discriminatory power of the paragraphs and their consistency were also extracted if applied to the specific building sample of (134) female students. The researchers conducted the results were arranged in ascending and descending order from the lowest score to the highest score, where (27%) of the highest and lowest scores were selected. The differences between the two groups were processed using a t-test to extract the discriminatory power. After that, the scale items were verified for discriminatory validity, and then the internal consistency of the item with the total score for the field as a whole was verified using a simple Pearson correlation coefficient. After verifying the construct validity of the items, the results were processed by applying the scale to a construct sample of (134) female students on Monday (10/6/2024). The researchers verified the stability of the scale using the split-half method by using the simple correlation coefficient, the stability coefficient reached (0.662), and the Spearman correlation coefficient reached (0.797), as they enjoyed high stability. The Cronbach's alpha method was also used, and the stability coefficient reached (0.871) at a significance level of (0.05).

Exploratory Experiment

The researchers conducted an exploratory experiment to test the setting skill on Monday (October 7, 2024) with (15) female students from the College of Physical Education and Sports Sciences for Woman, from the same research community and outside the main research sample, before the start of the study this was to avoid errors. This is done through the technical performance evaluation test for the setting skill prepared by (Naima Zidane and others. (2012) and shown in Appendix No. (2), which includes a skill test of 10 points divided into the preparatory section (3) points, the main section (5), and the final section (2), where arbitrators evaluate the performance.

Pre-tests

The pre-test for the deliberative thinking scale and the technical performance test for the setting skill were conducted on Wednesday (October 9, 2024) at the College of Physical Education and Sports Sciences for Woman.

Main experiment

After the researchers prepared educational units specific to the beehive strategy, the application period was over (6) educational units from (10/13/2024) to (11/24/2024), at a rate of one educational unit per week, which was on Sunday. The duration of the educational unit was (90) minutes, divided into three sections: the preparatory section, which lasted (15) minutes and consisted of a general warm-up and physical exercises. The main section and its duration is (60) minutes for each educational unit. Thus, the second objective is achieved because the objective here is procedural and not statistical. The experimental group was divided into (3) small groups, each group including (5) female students, each two students forming a pair of female students, with a fifth student playing the role of the queen who is responsible for transferring questions and information from the school to the group. She is also responsible for managing the discussions and dialogues that take place between the members of one group and each pair of pairs. At the end of the time allocated for answering, the queen takes the answer to transfer it to the school, noting that the role of the queen is a transitional role. The student is nominated according to her activity during the educational unit to lead the group in the next educational unit. The queen is also distinguished by wearing a special scarf that distinguishes her during the performance. This procedure was one of the most important means of suspense and excitement that the students felt during the application of the strategy, noting that the time for the educational side of each educational unit is (20) minutes. As for the practical side, its duration was (40) minutes for each educational unit, which included the application of various exercises that support the skill and help them learn artistic performance. The teacher gives these exercises to them, and the application process takes place within the same groups and with the same mechanism. The educational aspect was also followed, and also under the Queen's leadership. Some competitive exercises were also given, similar to game situations, to familiarize the students with the variables that occur during skill performance. They were observed during the exercises, provided with feedback, and guided. The concluding section lasted (15) minutes for each educational unit.

Post-tests

The researchers conducted the post-tests on Sunday, November 24, 2023, under the same temporal and spatial conditions.

Statistical Methods

The search data was processed through the Statistical Package for the Social Sciences (SPSS).

- T-test law
- Arithmetic mean
- Standard deviation

Findings

Presentation the resulte of pre- and post-test of the deliberative thinking scale and setting skill for the control group

Table (1) shows the arithmetic mean, standard deviation, and calculated (T) value for the samples, the significance level, and the significance of the differences for the control group in the pre- and post-tests. Deliberate thinking of the control group calculated t value was (-15.996), which appeared to be statistically significant. As for the skill of setting the calculated T, value was (4.795) and the significance level value of the test was (0.000), which is smaller than the significance level (0.05), which indicates that the differences were significant and in favor of the post-test.

Table 1. Shows the pre- and post-test of the deliberative thinking scale and setting skill for the control group.

Variables	Pre-test		Post-test		arithmetic mean of difference	standard deviation of differences	T value calculated	Level Sig	Type Sig
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation					
deliberative thinking	45.466	3.113	56.600	3.224	_11.1333	0.6960	_15.996	0.000	Sig
setting	4.174	0.501	5.173	0.547	0.99867	0.20827	4.795	0.000	Sig

Degree of freedom: 14 significant at the error level of (0.05).

Presentation the resulte of the pre- and post-test of the deliberative thinking scale and setting skill for the experimental group

Table (2) shows the arithmetic mean, standard deviation, and calculated (T) value for the samples, the significance level, and the significance of the differences for the experimental group in the pre- and post-tests. Deliberate thinking of the experimental group calculated t value was (-30.640), which appeared to be statistically significant. As for the skill of setting the calculated T, value was (-8.484) and the significance level value of the test was (0.000), which is smaller than the significance level (0.05), which indicates that the differences were significant and in favor of the post-test.

Table 2. Shows the results of the pre- and post-test of the deliberative thinking scale and setting skill for the experimental group.

Variables	Pre-test		Post-test		arithmetic mean of difference	standard deviation of differences	T value calculated	Level Sig	Type Sig
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation					
deliberative thinking	46.200	3.931	69.400	3.202	_23.200	0.7571	_30.640	0.000	Sig
setting	4.462	1.307	7.729	0.507	3.32666	0.3850	8.484	0.000	Sig

Unit of measurement: Degree/Degree of freedom 14 Significant at the error level of (0.05)

Presentation the resulte of the post-tests for the experimental and control groups in the deliberative thinking and setting skill scales

Table (3) shows the arithmetic mean, standard deviation, and calculated (T) value for the samples, the significance level, and the significance of the differences for the experimental and control groups in the post-test. Deliberate thinking calculated t value was (10.907), which appeared to be statistically significant. As for the skill of setting the calculated T, value was (13.264) and the significance level value of the

test was (0.000), which is smaller than the significance level (0.05), which indicates that the differences were significant.

Table 3. Shows the results of the post-tests for the experimental and control groups in the deliberative thinking and setting skill scales.

Variables	Experimental group		Control group		T value calculated	Level Sig	Type Sig
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
deliberative thinking	69.400	3.202	56.600	3.224	10.907	0.000	Sig
setting	7.729	0.507	5.173	0.547	13.264	0.000	Sig

Unit of Measurement: Score, Significance of Differences (0.05), Sig score less than (0.05), Degree of Freedom n-2 (28)

Discussion

(Table 3) shows that there are significant differences between the pre- and post-tests in deliberate thinking and technical performance of the setting skill for both groups. The researchers attribute the reason for the emergence of differences between the experimental group and the control group to the strategy and its role. The beehive strategy helped improve coordination and interaction of the students with each other in the cells within each group in the practical volleyball lesson, building a team spirit within the practical lesson atmosphere, whose educational tasks for each skill exercise were graded from easy to difficult, in an atmosphere that promoted teamwork and improved communication between the students. This performance also developed focus while dealing with the challenges of performing each educational exercise for the setting skill. This was due to the good use of the beehive strategy vocabulary in the lesson, which helped enhance movement and collective interaction between the beehives formed by the students, as well as enhancing coordination between each pair of them in each cell. This helped benefit from the exchange of bilateral experience to support the cognitive structure of this skill performance, which led to the development of the students' ability to perform the skill. It enhanced the joint cooperation processes in each beehive and between other beehives by exchanging positions and roles according to the applications of this strategy, which together led to a positive impact on learning to perform the volleyball setting skill for this group, in addition to the good diversity of educational situations in the beehive strategy, and the adoption of the principle of diversification by applying and practicing educational exercises that were appropriate for the age and gender of the sample, and as a result of the school's use of motivational phrases to enhance the students' confidence, and this strategy provided the opportunity for the school to provide individual and customized feedback on each student's performance of this skill, which enhances their confidence in their practical practice of the skill performance that witnesses immediate monitoring and corrections from the students of the beehives and the school in an atmosphere of fun and freedom in choosing those roles, which prompted them to activate their required role in learning this skill in group circles of cooperative beehives. This is consistent with the opinion of Abbas & Nseif (2023), who believes that the use of such strategies ensures that students are not passive learners, but rather productive learners within their groups through active participation in learning with their colleagues and encouraging each other, in addition to the principle of equal opportunities in Supporting the cognitive structure by answering the questions on the question cards prepared in advance by the school and given to the members of one cell by the queen, thus starting the process of discussion and dialogue among the members of one cell first, then discussions between all cells to think about analyzing the questions and trying to share information in a collective thinking process to reach the solution. This is consistent with the opinion of Basul (2024), who believes that learning according to the Beehive strategy (aims to create a participatory learning environment that resembles a hive in its organization, where both the teacher and students work within an interconnected system that enhances the desire to learn, active interaction, and self-reliance). This is in addition to adopting the principle of equal opportunities in receiving feedback on skill performance and the objectivity of its evaluation within one lesson from these practical lessons with the beehive strategy, the application process of which was characterized by an atmosphere of suspense and educational fun, which enhanced the role of practice and application, which are the most important factor in improving performance. This is consistent with the opinion of Adham & Al-Zuhairi (2022) "The use of feedback to correct the mistakes made by the student when applying a skill has a role in improving the performance of students and learning skills in volleyball". It is consistent with (Ali, 1998) "The students teaching each other under the supervision of the teacher and the guidance of the student is from the same age group

as his peers or category.” Abbass Al-Sade et al. (2023) indicated “a strategy used by the teacher in teaching in which information is presented in the form of a question that requires a solution to an exciting situation that requires thinking processes to make a decision and manage matters by the learner with supervision and guidance from the teacher.” He agrees with Qawra et al. (2020) “The teacher, by being a guide and inspirer, helps his students to investigate and explore through the thinking questions he directs to them and corrects their information, in which the students immerse themselves in applying it practically to reach a deeper understanding of the skills and information.” Muhalhal & Niema (2023) indicated that “making the learner the basic pillar for progress through solutions, experimenting with them and reaching a result through feedback.” The researchers also attribute to give motivation by the school to female student's increases their deliberate thinking, management of affairs, insistence and perseverance to learn the desired skill and provide solutions and try them. This is what Hamilton (2008) indicated: “Deliberate thinking is the motivation to reach the goal of planning, high effectiveness, perseverance and more complexity to reach high skills in decision-making, managing affairs and sharpening self-motivation in order to persevere and insist in moving towards achieving the goal.” Thus, the third goal was achieved. The results also indicate that there is a clear development in the results of deliberative thinking between the pre- and post-tests of the experimental and control groups. The researchers attribute the reason for this to the role of the strategy, which focuses on making the learner the focus of the educational process and thus a positive participant who focuses and thinks deeply about the information given to him, links situations between reality and his previous experiences, and analyzes information and data in collaboration with his group members, influenced by their opinions, learning from them, and continuing in the thinking process, which makes the learner's personality persevering and determined to achieve its goals. All of these qualities are qualities of deliberative thinking. This opinion agrees with the opinion of Al-Khazraji (2025), who sees (the measure of deliberative thinking according to the Snyder model three dimensions: (perseverance and determination, goal-directed determination, and support for self-talk for thinking). In addition, involving learners in the learning process in a positive and effective way, like the role the learner plays in the beehive strategy cell, makes the learner more deeply thinking and able to use skills such as analysis, critical thinking, and continuous training. This is what strategies call for. Modern teaching is consistent with the opinion of Al-Rashidi (2019) “Educational institutions are now required to train students to use thinking skills and train them at the levels of thinking and contemplation.” Conversely, deliberate thinking develops the learner's ability to be open-minded and flexible in thinking due to the multiple thinking processes it develops, such as analysis and deduction. This is consistent with the opinion of Jassim (2023), who believes that the level of deliberate thinking among sixth-grade students was high, and this was related to their ability to be intellectually open and flexible in thinking, in addition to the use of strategies such as self-questioning and logical analysis of the relationships between ideas thus, the third objective was achieved. As for the control group, as we note, its results were also significant, but not at the same level as the experimental group, which used the beehive strategy. The control group adopted the teacher's method in the traditional method, which relied on repetitions of exercises, which led to a learning process based on repetitions and feedback. This is consistent with the opinion of Bruner (2000), who believes that “repetition is the first principle in every learning process...the deepest moments of understanding stem from exposure to information and then revisiting it. Repeated exposure embeds the idea into the individual's consciousness. However, its results were lower than of the experimental group in terms of setting skills and deliberative thinking.

Conclusions

- By applying the deliberative thinking scale, the levels of this type of thinking among the research sample were identified in the pre- and post-tests, as well as for the control and experimental groups. The first objective was achieved:
- The implementation of the beehive strategy had an impact on learning the skill of setting, through improved performance among members of the experimental group and their superiority over the control group. Thus, the second and third objectives were achieved.

- The strategy contributed to increasing each student's self-confidence by generating ideas and cooperating among themselves through teamwork, positive participation by each student in the group, and encouraging each other to think and propose solutions to problems.

Recommendations

- Need to use the beehive strategy in conducting research on individual and team sports.
- Beehive strategy should be adopted for its effective role in developing deliberate thinking and learning the skill of setting in volleyball teaching.

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Appendices

Appendix 1. Deliberate Thinking Scale

Dear Student.....

Greetings:

I enclose for you a volleyball deliberate thinking scale consisting of several paragraphs, each with answers or (alternatives), three of which represent your opinion on its content.

Please choose one of these alternatives by placing a check mark (/) in the box that represents your opinion.

Please do not answer the paragraphs with more than one option.

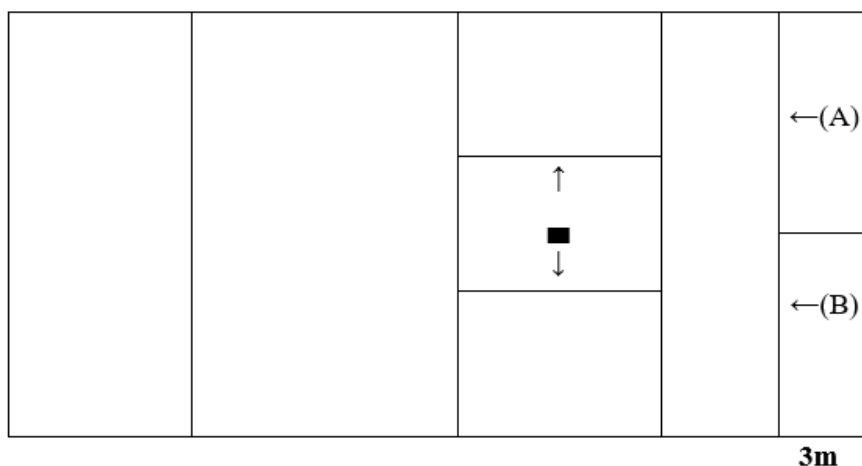
Please do not neglect to answer any of the paragraphs.

Your response will be kept strictly confidential.

Appendix 1. Deliberate Thinking Scale

No.	Paragraphs	Always applies	Sometimes applies	Never applies
1	I invest all my time in training when learning the volleyball setting skill.			
2	I strive with all my energy to learn the volleyball setting skill.			
3	I prefer to divide my effort and time when learning the volleyball setting skill.			
4	I look positively at the future of the volleyball setting process.			
5	When performing the setting skill, I devote all my effort without any delay.			
6	I am able to overcome any weaknesses that hinder my learning the volleyball setting skill.			
7	I always challenge myself to ensure that I can progress in learning the volleyball setting skill.			
8	When I perform the setting skill successfully, my abilities increase significantly as a result of strengthening my strengths.			
9	Despite the distractions in the learning environment, I remain focused on the details of my volleyball setting skills.			
10	When learning the setting skill, I prioritize sustainable future rewards.			
11	I consider the pros and cons of learning the volleyball setting skill.			
12	I find that setting challenges is essential and important when learning the volleyball setting skill.			
13	I find solutions to all the educational problems I face while learning the volleyball setting skill.			
14	I sometimes doubt my abilities when learning the volleyball setting skill.			
15	The strength of my thinking brings me comfort and happiness when learning the volleyball setting skill.			
16	My abilities make me ready to face any challenge when learning the volleyball setting skill.			
17	I know that learning the volleyball setting skill is difficult, but I am capable of it.			
18	When learning the setting skill, if I fail once, I succeed the next time.			
19	I allow my mistakes to discourage me when learning the volleyball setting skill.			
20	I stop and retreat from striving and exerting effort when learning the volleyball setting skill.			
21	I am optimistic about the future despite the challenges I faced when learning the volleyball setting skill.			
22	When my duties are numerous, I am able to perform my training duties when learning the volleyball setting skill.			
23	I feel I have the information to help me learn the volleyball setting skill.			
24	Continue trying to obtain information to help me learn the volleyball setting skill.			
25	Continue practicing despite the difficult obstacles in learning the volleyball setting skill.			

Appendix 2. Shows the setting skill test.



Setting test for Centers (2) and (4)

The purpose of this test is to measure the technical performance level (performance technique) of the skill of preparing from the front of the head to the front, using experts.

Equipment: A legal volleyball court, volleyballs, and a measuring tape. The back court areas are divided into two rectangles (3 x 4.5), each designated for the coach to stand in to pass the ball to the tester.

Performance Specifications: The tester stands in Center (3), and the coach is in Area (A) to pass the ball to the tester, who prepares it and directs it to Center (2). The tester is given three attempts to this center, followed by three more attempts to prepare it and direct it to Center (4) after it is passed to him by the coach, who is standing in Area (B).

Recording: The tester completes the six attempts, and these are evaluated by experts, who divide the score into skill sections as follows:


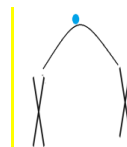

1. Preparatory section, grade (3).
2. Main section, grade (5).
3. The final section and its grade (2)

where the evaluation grade becomes (10)

A model for an educational unit on the skill of setting in volleyball using the Beehive strategy

Appendix 2. Shows the setting skill test.

Lesson sections and duration	Activities	Formations	Application notes
Introduction (5) minutes	(Standing) in a straight line, taking absences, preparing the beehive strategy supplies, and the lesson began with a collective shout (sports - activity).		<ul style="list-style-type: none"> The school emphasizes proper posture for students. The school emphasizes students' adherence to discipline. Instructs students to remove anything that could expose them to injury.
Introductory section (20) minutes	General warm-up (4) minutes		<ul style="list-style-type: none"> Students stand in a hexagonal shape, facing each other in groups of four, to perform the physical exercises.
	Physical exercises (15) minutes		<ul style="list-style-type: none"> Emphasize correct knee extension and bending. Emphasize torso rotation with four counts to the right and four counts to the left.

Main section (60) minutes	Educational section (10) minutes	<ul style="list-style-type: none">- The students sit in four cells, each containing (6) students, facing the teacher. The teacher explains the skill and presents the details of its three parts to them using an educational flex that illustrates the intricacies of its performance.- The teacher performs the skill several times without the ball and with the ball.- At the end of the educational aspect and before beginning the practical aspect, the teacher prepares educational cards designed in the form of hexagonal cells and in different colors, containing the questions related to the skill.- A queen bee is assigned to each cell and given a scarf that highlights her role within the cell. She performs her duties, including receiving and delivering the hexagonal card containing the question from the teacher, so that the answers reached by the pairs within the cell are announced. - In the final educational moment, the teacher poses a question about skill performance using multiple-choice hexagonal cards, to stimulate brainstorming among the students. When choosing an answer, each pair of students from the cell places a mark (✓) on the cards and hands them to the queen. The answer is as follows:<ul style="list-style-type: none">- Q/ What is the distance between the feet?- 1- Small 2- Suitable for chest width 3- Large		<p>The school is keen to support team spirit and teamwork among students.</p> <p>The school monitors students' acceptance and integration into the learning environment.</p> <p>Before beginning the practical aspect, the school prepares cards designed in the form of hexagonal cells containing questions. The volleyball court floor is laid out in hexagonal shapes for the beehive students to stand on, highlighting a pair of a specific color in each. The students are divided into (4) small groups (cells), each with (6) students, consistent with the hexagonal shape of the beehive.</p>	
Lesson sections and duration		Activities	Formations	Application notes	
Main Section	Practical Section (50 minutes)	<p>The queen of each cell receives the hexagonal cards to choose the most appropriate exercise according to the degree of difficulty. When choosing the answer, each pair from the cell puts a mark (✓) on the cards and hands them over to the queen. They are given (2) minutes for group discussion. After answering the question, the queen hands over the answers and the teacher announces the correct answer. Then the students divide the cell into pairs, and each pair stands with a distance of (4) meters between them. They pass the ball between them using the setup to enhance coordination between two colleagues. The distance can be increased gradually or a specific number of passes can be determined without errors. The performance continues for (10) minutes repeatedly. The queen of each cell receives the hexagonal cards to choose the most appropriate exercise according to the difficulty level. When choosing the answer, each pair of cells puts a mark (✓) on the cards and hands them to the queen. They are given (2) minutes for group discussion. After answering the question, the queen hands over the answers and the teacher announces the correct answer. Then, each student stands at a corner of the hexagonal cell drawn on the field. The ball starts from one of the corners and moves through the cell by performing the setting. The direction can be changed or the speed of passing can be increased. If the students acquire greater skill, a player can be added in the middle to try to cut the ball. The performance continues for (10) minutes repeatedly.</p> <p>The queen of each cell receives the hexagonal cards to choose the most appropriate exercise according to the degree of difficulty. When choosing the answer, each pair from the cell puts a mark (✓) on the cards and hands them over to the queen. They are given (2) minutes for group discussion. After answering the question, the queen hands over the answers and the teacher announces the correct answer. Then the students divide the cell into pairs, and each pair stands with a distance of (4) meters between them. They pass the ball between them using the setup to enhance coordination between two colleagues. The distance can be increased gradually or a specific number of passes can be determined without errors. The performance continues for (10) minutes repeatedly. The queen of each cell receives the hexagonal cards to choose the most appropriate exercise according to the difficulty level. When choosing the answer, each pair of cells puts a mark (✓) on the cards and hands them to the queen. They are given (2) minutes for group discussion. After answering the question, the queen hands over the answers and the teacher announces the correct answer. Then, each student stands at a corner of the hexagonal cell drawn on the field. The ball starts from one of the corners and moves through the cell by performing</p>		<p>The exercises are graded in difficulty to accommodate individual differences.</p> <p>Each cell performs the most appropriate exercise according to the grade of difficulty.</p> <p>The school encourages competition between cells.</p> <p>The school emphasizes synchronous execution, with all cells working simultaneously.</p> <p>The school monitors the cells' work and provides immediate feedback.</p> <p>Emphasizes student participation in evaluating performance based on comparison with the model presented.</p>	
				<p>Each cell shares its experience and learnings with the rest of the cells.</p> <p>The school monitors the role of the student leader by monitoring the recording of each cell.</p>	

the setting. The direction can be changed or the speed of passing can be increased. If the students acquire greater skill, a player can be added in the middle to try to cut the ball. The performance continues for (10) minutes repeatedly.

The queen of each cell receives six-card set to choose the most appropriate exercise according to the degree of difficulty. Upon choosing an answer, each pair from the cell marks (✓) on the cards and hands them over to the queen. They are given (2) minutes for group discussion. After answering the question, the queen hands over the answers, and the teacher announces the correct answer. The teacher also instructs students to maintain coordination during movement. Each two cell members stand in two groups in two parallel lines, and each group moves forward and backward together while passing the ball during the setting.

Harmony in movement must be maintained. The performance continues for (10) minutes, repeatedly.

