

6-29-2026

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Mayada Hassan Hamza Hassan

Al-Madhatiya Preparatory School for Girls, Babil Education Directorate, jnejbdbh333@gmail.com

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Hassan, Mayada Hassan Hamza (2026) "The Effect of the Evolutionary Competition Strategy, According to Learning Styles, on Creative Thinking and Technical Performance in the Long Jump Among University Students," *Modern Sport*. Vol. 25: Iss. 2, Article 15.

DOI: <https://doi.org/10.54702/2708-3454.2137>

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ORIGINAL STUDY

The Effect of the Evolutionary Competition Strategy, According to Learning Styles, on Creative Thinking and Technical Performance in the Long Jump Among University Students

Mayada Hassan Hamza Hassan 

Al-Madhatiya Preparatory School for Girls, Babil Education Directorate

Abstract

The importance of the study lies in measuring the impact of the evolutionary competition strategy on developing creative thinking and improving the technical performance of the long jump event among students of the College of Physical Education and Sports Sciences. The research problem is represented in the difficulties that students face in learning motor skills, especially skills that require linking the stages of technical performance, in addition to the weak superficial understanding of information and the inability to employ it effectively in practical performance. The research aimed to measure the effect of the evolutionary competition strategy according to learning styles in developing creative thinking and improving the technical performance of the long jump event. The study used the experimental method with the design of equivalent groups with two groups (control and experimental) with pre- and post-tests. The sample included first-year students at the University of Babylon for the academic year 2025–2026, numbering (164) male and female students distributed across four academic sections. The results showed significant differences in favor of the post-test in all learning styles, as the theoretical learners style achieved the highest percentage of improvement in creative thinking from an average of (78.667) to (125.667) by 59.7%, and the technical performance of the long jump also improved from (2.333) to (5.333) by 128.6%, which indicates the effectiveness of the evolutionary competition strategy in improving the variables under study. The study concluded that the developmental competition strategy had a clear positive impact on developing creative thinking and improving skill performance, and recommended the possibility of employing it in teaching field activities, and adopting developed creative thinking measurement tools, in a way that contributes to improving the quality of university education and achieving better learning outcomes in light of the principle of good education.

Keywords: Evolutionary competition, Creative thinking, Long jump effectiveness

1. Introduction

The development that has taken place in the educational process in our time has contributed greatly to developing the prevailing view towards learning, as it has taken it out of its framework that focused on the role of the teacher and considered him to have the only positive role in this process by presenting and delivering all the information and knowledge related to the learning subject to the student. The student's role was limited to listening and memo-

rizing, so the educational methods and means have multiplied, including the use of approved educational methods that have proven effective in achieving the goals, including the developmental competition strategy, which has become an important pillar in the cornerstones of the learning process, as it meets the needs of the teacher and the student in several areas, the most important of which is giving the student a role in research, discovery, thinking, reflection and imagination to achieve the desired learning, developing a spirit of constructive competition, as one of

Received 20 April 2026; revised 23 April 2026; accepted 15 June 2026.
Available online 29 June 2026

E-mail address: jnebjdh333@gmail.com (M. Hassan Hamza Hassan).

<https://doi.org/10.54702/2708-3454.2137>

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the educational approaches that provides a learning environment based on gradual competition, and stimulating creativity and innovation, which allows students to develop their motor skills gradually, and at the same time raises their creative thinking as an internal motivator that promotes self-learning and critical thinking. Accordingly, the importance of this research is manifested in presenting an educational unit with the developmental competition strategy according to the learning patterns in creative thinking and learning the technical performance of the long jump activity among students. The research problem lies in the existence of difficulties and obstacles that many students face during the process of learning and acquiring skills, this is especially true for skills that require integration and connection between different performance stages. Some students suffer from a limited level of in-depth understanding and comprehension of information, which is reflected in their ability to process and apply it during performance. These difficulties increase when learning new and multi-required skills, affecting the speed of learning and the accuracy of performance. This necessitates the search for educational methods and strategies that contribute to improving the process of acquiring skills and developing students' performance levels, The research aims to prepare educational units and identify the effect of the developmental competition strategy according to learning styles and learning the technical performance of the long jump event for students, due to its effect on attracting students' attention by presenting information in a competitive way, and to identify the results of the differences between the pre- and post-tests with the developmental competition strategy according to learning styles for the experimental and control research groups in learning the technical performance of the long jump event for students.

The study by Dupri et al. (2021) indicated that employing active and discovery learning models in physical education contributes to the development of creative thinking among students, as the results showed that involving the learner in research and exploration leads to improving his ability to produce innovative motor ideas and solutions (Dupri et al., 2021). The study by Rivera et al. (2024) confirmed that the differential learning method leads to improved learning of explosive motor skills compared to traditional methods based on repetition, This positively impacts the performance of jumping skills ask" (Rivera et al., 2024). The systematic review conducted by Silva and Bezerra (2020) concluded that directing the learner's attention towards the external goal of the movement contributes to improving the learning and performance of the long jump compared to traditional teaching methods, (Silva &

Bezerra, 2020), and Zhang et al. (2025) showed that "physical activity in physical education classes is positively associated with creative thinking, and that emotional and motivational variables contribute to enhancing this effect" (Zhang et al., 2025). The study by Kamnardsiri et al. (2021) showed that "the use of intelligent educational systems and continuous feedback helps learners improve technical performance in the long jump by analyzing the stages of performance and providing appropriate feedback" (Kamnardsiri et al., 2021).

2. Methods and protocols

2.1. Research methodology

The nature of the problem addressed by the researcher determines the methodology chosen to obtain results. Therefore, the researcher adopted the experimental method, which is considered "the closest method to solving problems scientifically and the most valid approach" (Malham, 2000). An experimental design based on two groups (experimental and control) was adopted, with random selection of participants to ensure the equivalence of the two groups. The design also included a pre- and post-test to accurately measure the effect of the independent variable and compare the changes that occurred in both groups, Table 1 illustrates the experimental design of the research.

2.2. Research community and sample

2.2.1. Research sample

The research population was determined to be the first-year students in the College of Physical Education and Sports Sciences, University of Babylon, for the academic year 2025–2026, numbering (164) male and female students, divided into four sections (A-B-C-D) with different numbers in each section (24-45-46-49) according to the organization followed in the college. As for the research sample, it is defined as "a part of the original population containing some elements that were selected from it in a specific way in order to study the characteristics of the original population" (Al-Sirafi, 2002). It was selected randomly using a simple lottery method to determine the (preparation sample), (exploratory experiment sample), and (main experiment sample), as shown in Table 2 below. The failing students (5), the game practitioners (2), and the teachers (3) were excluded. The research sample was divided according to the scale of the prevailing learning styles, and Table 2 shows this.

Table 3 shows the division of the research sample into both the control and experimental groups, where the learning styles were equal in number, with

Table 1. Shows the experimental design of the two research samples.

Groups	Pre-test	experimental variable:	Post-test	Comparison
Control group	- test of creative thinking. - performance-based learning test for the skills under investigation.	The educational units followed by the subject teacher.	- Creative thinking test - Performance learning test for the skills under investigation.	Comparison between the control and experimental samples in pre- and post-tests.
Experimental group		The units used by the researcher are based on evolutionary competition.		

Table 2. Shows the distribution of the research population and its numbers across the research samples.

T	samples	Division	Total number	Sample number	percentage
1	Control sample	C	46	24	52.17%
2	Experimental sample	B	45	24	53.33 %
3	Exploratory sample	D	49	10	20.40%
4	Scale development sample	D	49	39	79.59%

Table 3. Experimental and control groups and their distribution according to learning styles.

Learners styles	Contemplatives	Pragmatists	Practicals	Theorists
Control group	6	6	6	6
Experimental group	6	6	6	6

(6) students for each style, by pure chance, because a number of students did not have clear and explicit answers on the learning styles scale, even though the researcher explained the steps for answering the items of the scale carefully and clearly.

2.3. Research field protocols

2.3.1. Protocols for preparing the creative thinking scale

After reviewing numerous references, sources, and scholarly papers that addressed the Creative Thinking Scale, the researcher found that the scale developed by Bernstein in 1989 was suitable for the nature of the research. This scale, originally designed by Bernstein, consists of 74 items designed to measure creative thinking. Responses are provided through three options: (agree, neutral, disagree). The total score ranges from 74 to 222 points. Nadia Hayel Al-Surour translated Bernstein's Creative Thinking Scale (1974) into Arabic, tested it in Jordan, and recommended its adoption in the Arab world. It was subsequently applied by Zahra Jamil Saleh in her 2006 master's thesis at the University of Mosul, College of Physical Education (Saleh, 2006), after modifying the items to suit the field of sports.

2.3.1.1. Preparing the items for the creative thinking scale

Although the Creative Thinking Scale was prepared for the Iraqi sports environment by the researcher (Zahra Jamil Saleh) from the University of Mosul in (2006), the researcher was obliged to prepare this scale to be suitable for the current research sample, which is the first-year students in the College of Physical

Education and Sports Sciences, University of Babylon, for the academic year 2025–2026. The researcher modified the items of the scale to suit the nature of the research sample. After that, the modified scale was presented to a group of experts and specialists in the field of psychology and motor learning to express their opinions on the validity of the modifications made to the items of the scale. The scale included three fields that included (the original items, the modified items, and the modification that is based on what the experts express in terms of opinions or correction regarding the modified items).

2.3.1.2. Exploratory experiment for the creative thinking scale

The Creative Thinking Scale was applied to a sample of (10) students, the pilot sample, on Sunday, December 19, 2025, to ensure the clarity of the instructions and the suitability of the items for the research sample, and also to avoid the difficulties and obstacles that the researcher might face during the application of the scale. After the application of the scale, it became clear that there were no difficulties during the application, and the time to answer took about (15–18) minutes, and thus the scale became ready to be applied to the sample of numbers for the purpose of statistical analysis.

2.3.2. The test for the technical performance phases of the long jump event (Hay, 1993)

Based on numerous scientific sources, the researcher developed a technical performance test for the long jump, as follows:

- **Test Name:** Technical Performance Test for the Long Jump
- **Purpose:** To evaluate the technical performance of the long jump.
- **Required Equipment:** Legal long jump field, measuring tape, whistle, camera stand, high-definition video cameras, and a technical performance evaluation form for the long jump.
- **Protocols:** The student stands on the approach path at the distance he prefers, and upon the signal, the student performs the long jump attempt. During the attempt, the researcher filmed the technical performance of three attempts for each student.
- **Recording:** After the completion of the test and filming, the researcher presented the students' performance attempts to the experts for the purpose of evaluating the best attempt for each student. The results of the experts' evaluation were approved by printing this recording on a DVD and distributing it to the evaluating experts who specialize in evaluating the technical performance of the long jump event. Each DVD is accompanied by a technical performance evaluation form.
- **Technical Performance Evaluation Form:** The researcher prepared a technical performance evaluation form for the long jump stages and presented it to experts and specialists in the field of athletics, determining the percentages for each stage.

2.3.2.1. Exploratory experiment

A pilot experiment is a small-scale experiment designed to test the validity of a main experiment. It defines the original population, the elements or type of test, and a small sample from that population to conduct the experiment. It is carried out under the conditions of the main experiment, and its importance lies in identifying the difficulties the researcher will face in order to avoid them in the main experiment (Mahjoub, 1988). The researcher conducted the pilot experiment in the playground at the College of Physical Education and Sports Sciences, University of Babylon, during the academic year (2025–2026) on a sample of (10) students from the research population. They were randomly selected from among the members of the research population on (December 19, 2025) with the aim of identifying the difficulties and obstacles that the researcher might encounter.

2.3.3. Main experiment

After the scale was ready, the researcher applied the scale to the sample members for both the control

and experimental groups, and the scale was corrected according to the correction key.

1. Creative Thinking Scale Scoring Key:

- ✓ Since the scale consists of 53 items and is based on three options (Agree, Neutral, Disagree), the scoring key is distributed as follows:
- ✓ For positive items: The responses are given the following scores: (3) points for the highest score, (2) points for the middle score, and (1) point for the lowest score.
- ✓ For negative items (if any): The scoring is reversed to be: (1) point for the highest score, (2) points for the middle score, and (3) points for the lowest score.
- ✓ Total score: The score obtained for each student ranges from a minimum of 53 points (if the lowest score is chosen for all items) to a maximum of 159 points (if the highest score is chosen for all items).

2. Key to Correcting the Technical Performance of the Long Jump:

- ✓ The correction key here is based on the expert evaluation form (sports judging):
- ✓ A score is assigned to each of the four phases of the long jump (approach, takeoff, flight, landing).
- ✓ The total skill score is out of (10) points; where (1) represents the lowest level of performance, and (10) represents perfect technical performance free of errors.

Steps to implement the strategy:

The developmental competition strategy is based primarily on moving the learner through escalating levels and educational stations that take into account individual differences and learning styles (visual, auditory, kinesthetic), where competition does not depend on absolute victory but on the amount of gradual improvement and development of performance.

1. Preparation and Explanation Phase (5 minutes): The lesson begins by preparing the students physically and psychologically. A brief oral explanation is given, a quick demonstration of the skill is presented, and motivational questions are posed about the performance and stages of the long jump.
2. Presentation and Analysis Phase According to Learning Styles (10 minutes): The skill presentation is divided to address different learning styles:

- Auditory pattern: Explaining the steps and stages of the long jump verbally.
 - Visual pattern: Displaying pictures, diagrams, or a video that illustrates the stages of movement in detail (approach, ascent, flight, landing).
 - movement pattern: Giving students the opportunity to do a simple initial performance test of the skill to sense the movement.
3. The stage of dividing into levels (the beginning of evolutionary competition). Students are classified and divided based on their initial level of performance into three basic categories:

1. Beginner level. 2. Intermediate level. 3. Advanced level. 4. Internal competition, promotion, and development phase (20 minutes)

This is the practical essence of the strategy, and it is implemented through the following mechanism:

Internal competition: Students of similar abilities compete (only within their group) to avoid frustration and enhance motivation.

The calculation mechanism: The focus is not only on the longest distance, but also on calculating the degree of gradual technical improvement in skill performance.

Upward promotion (development): The student who demonstrates significant improvement and masters the technical performance standards at their current level is promoted and advanced to the next higher level (e.g., from beginner to intermediate, and from intermediate to advanced).

Training stations: Work is distributed across specialized stations to connect the movement components:

1. Approach and speed control station.
2. Proper takeoff from the takeoff board station.
3. Balance during flight station.
4. Proper landing in the pit station.
5. Conclusion and evaluation phase (5–10 minutes)

A mini final competition is held to document progress, provide feedback from the school, and commend students who have achieved the highest rate of progress and advancement between levels, followed by relaxation and calming exercises and closing the lesson.

2.3.4. Pre-tests

The researcher, with the help of the assisting team, conducted pre-tests for the research sample (control and experimental) related to the research variables (creative thinking and technical performance of the long jump event) in the playing field at the College of Physical Education and Sports Sciences/University of Babylon, for the research sample (control and experimental) and this was on the two days (Monday

/Tuesday) corresponding to 5/1/2026 and 6/1/2026 and the tests were according to the following sequence:

Day 1: Creative Thinking scale Test. After completing the necessary steps to prepare the scale and confirming its psychometric properties, the scale was finalized, consisting of 53 items. Each item was answered with four options: (Agree, Neutral, Disagree). Each item was assigned a score of 1, 2, or 3. To calculate the total score, the student's scores on each item were added together.

Day 2: Technical performance evaluation test for the long jump event. The researcher used a camera to record the performances and save them on a DVD for distribution to the evaluators. The results were then recorded on a form specifically designed for the long jump.

2.3.5. Post-tests

After completing the application of developmental competition, the researcher, with the help of the assisting work team, conducted the post-tests for the research sample (control and experimental) on Monday/Tuesday, corresponding to (7/3/2026) and (8/3/2026), in the same sequence as the pre-tests, as the researcher took into account the same conditions in which the pre-tests were conducted, and at ten-thirty in the morning.

3. Present and discuss the pre- and post-test results for both the control and experimental groups for the studied variables

3.1. Present and analyze the pre- and post-test results for the control group for the studied variables

Scoring parameters for the scales (highest, lowest, and hypothetical mean):

Creative Thinking Scale (53 items, options: 1–2–3):

Lowest possible score: 53.

Highest possible score: 159.

Hypothetical mean: 106.

Technical performance in the long jump (expert evaluation form, 1–10 points):

Lowest possible score: 1.

Highest possible score: 10.

Hypothetical mean: 5.5.

The table shows statistically significant differences between the pre-test and post-test in the variables of creative thinking and technical performance of the long jump activity for all learning styles (reflective, pragmatic, practical, and theoretical), as all values after application achieved a significant increase in the means with a decrease in significance values (Sig.) to

Table 4. It shows the arithmetic means, standard deviations, calculated (T) value, and level of statistical significance of the differences between the pre- and post-tests of the control group in creative thinking and technical performance of the long jump according to learner patterns.

Learners styles	variables	hypothetical mean	Pre-test		Post-test		T-value	Sig. value	significance
Contemplatives	Creative thinking	106	S	A	S	A			
Pragmatists		106	74.333	7.448	110.333	6.976	14.616	0.000	significant
Practicals		106	77.000	6.899	123.167	5.811	13.061	0.000	significant
Theorists		106	81.833	9.152	118.333	7.202	6.292	0.001	significant
Contemplatives	technical performance of the long jump event	5.5	78.667	9.331	125.667	6.623	10.802	0.000	significant
Pragmatists		5.5	3.167	1.169	5.292	0.246	4.332	0.007	significant
Practicals		5.5	3.333	1.571	4.750	0.612	2.795	0.038	significant
Theorists		5.5	2.667	0.817	4.792	0.459	10.543	0.000	significant

Below the significance level of (0.05), differences are considered significant when the value of (sig) $\leq$ (0.05).

Table 5. It shows the arithmetic means, standard deviations, calculated (T) value, and level of statistical significance of the differences between the pre- and post-tests of the experimental group in creative thinking and technical performance of the long jump according to learner patterns.

Learners styles	variables	hypothetical mean	Pre-test		Post-test		T-value	Sig. value	Type of indication
Contemplatives	Creative thinking	106	S	A	S	A			
Pragmatists		106	76.333	7.668	114.333	6.996	15.712	0.000	significant
Practicals		106	78.000	6.899	123.167	5.811	14.071	0.000	significant
Theorists		106	87.833	10.134	119.333	7.320	6.328	0.001	significant
Contemplatives	technical performance of the long jump event	5.5	80.667	11.231	128.700	6.098	12.903	0.000	significant
Pragmatists		5.5	3.354	1.437	7.292	0.246	6.422	0.007	significant
Practicals		5.5	3.754	1.768	4.950	0.765	3.899	0.038	significant
Theorists		5.5	2.869	0.976	4.896	0.567	11.644	0.000	significant

Below the significance level of (0.05), differences are considered significant when the value of (sig) $\leq$ (0.05).

less than (0.05) to significant levels, which indicates the effectiveness of the program used in improving the studied variables across the different learning styles.

The table shows that there are statistically significant differences between the pre-test and post-test in the variables of creative thinking and artistic performance of the long jump activity among all learning styles (reflective, pragmatic, practical, and theoretical). The results showed a clear increase in the arithmetic means in the post-test compared to the pre-test, with statistically significant calculated (t) values and a decrease in (Sig.) values less than (0.05) to significant levels, which indicates the effectiveness of the training program in improving creative thinking and artistic performance among the sample members regardless of the learning style.

This composite bar graph illustrates significant improvements in creative thinking scores from pre-test to post-test across all four learning styles, with the experimental group outperforming the control group and exceeding the hypothetical mean (106).

3.1.1. Discussion of the post-test results for the control and experimental research groups for the researched variables

Tables 4 and 5 shows approach used by the control group in developing creative thinking involves

providing learners with basic and practical facts that are determined according to the sections of the material given, which in return generate and create some intellectual concepts and habits in the group members. Therefore, this method does not give the learner enough opportunity to develop creative abilities. Since “creative abilities proceed in divergent directions (divergent thinking) that result in new behaviors characterized by their originality” (Al-Shibli, 2001). This method emphasizes memorization, recall, and performing pre-designed activities followed in the curriculum by the control group, which has become a mechanical, routine task for learners. This procedure does not give enough time for members of the control group to engage their minds with topics related to their creative abilities, and this contradicts educational theories and trends that emphasize making “the student the focus of the educational process and that the teacher’s role is to guide the activities that students perform indirectly” (Mahmoud Al-Hila, 2001). On the contrary, we see that the developmental competition that was given to the experimental group led to the development of their creative thinking to a good degree compared to the control group, as this strategy, with its learning mechanisms that rely on multiple learning patterns that take into account the orientations and desires of the learners and their ways of thinking, relying on the right and left hemispheres of the brain, in addition to the exercises prepared by the researcher, it was of a quality that simulates the

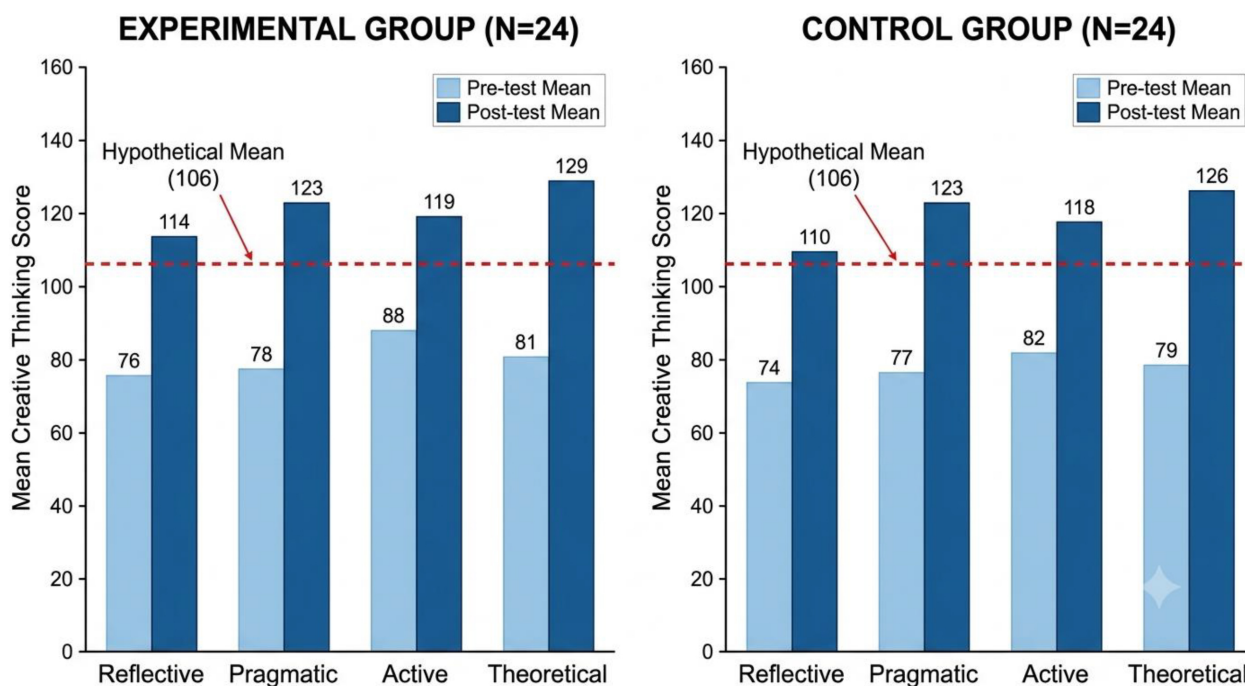


Fig. 1. Illustrates the levels of creative thinking and technical performance in the long jump event in the pre- and post-tests during the four learning stages for the experimental and control groups.

mental abilities of the students and the age group in which they are, and meets their desires and blends with their ways of thinking and relies on the two hemispheres of the brain in the logical structure and sequence from easy to difficult, which gave them a good opportunity to think instead of receiving information and relying on the teacher only in receiving knowledge and practice. As for the technical performance of the long jump event in the post-test for both the control and experimental groups, Tables 4 and 5 shows that the experimental group had the advantage. The researcher attributes the reason for this development to the use of developmental competition, which takes into account their classification based on learning styles, as they were divided into four groups on two dimensions. The first is the theoretical dimension, which is divided into two stages (reflective observation and concept crystallization). This stage included explaining the technical performance of the long jump event and asking questions related to the curriculum (educational units) in order to link and integrate them with the ideas of the sample to reach the correct and ideal answers. Then move to the second stage (crystallizing the concept), where the skill is presented by the subject teacher (the living model), with pauses that clarify the stages of learning the performance of the skill so that the members of the experimental group can fully visualize the artistic performance, as well as how to perform

it and visualize it in their minds before moving to the second dimension (practical), which consists of two stages: (active experimentation and tangible physical experiences). This includes performing what was explained and presented in the theoretical dimension, as “this strategy includes two paths, the first of which represents the perception of experience and the second of which represents the processing of experience information, and these two paths represent the learning and development process using developmental competition designed to enable learners to approach solving the problems they face and to achieve success in the educational process (Hussein et al., 2018). Likewise, the feedback given to learners in developmental competition, which contributed greatly to the development of the performance learning level of the skills under investigation, when the student performs motor skills, the teacher often uses words that are an incentive for better performance or for modifying performance (Al-Diwan & Ali, 2016). It is important to note here that the independence in decision-making by the members of the experimental group during performance is consistent with the final stage of developmental competition (tangible material experiences), in which the steps of the technician’s performance will be applied and repeated. Educational aids work to achieve communication and transfer educational goals from the teacher to the learner, and they increase the effec-

tiveness of the learning process and improve it, and motivate learners to participate more in educational situations and make them eager to participate further in learning and continue in it. And that it facilitates the process of remembering by recalling information (Mahmoud Al-Hila, 2001). Through the application of the developmental competition strategy, the researcher was able to distribute the curriculum units, where an important part of it went to support the (reflective) style by posing various questions related to learning performance and linking them to creative thinking, and giving the sample enough time to think and answer in a way that suits their creative abilities to develop them and then choose the optimal answer. "Those with this style have experiences that are meaningful to a person who is important to them, This is demonstrated by answering the following two questions: (Why am I learning? What am I learning?). For learning to be meaningful, it is assumed that the new learning experience is linked to the learner's prior knowledge that is relevant to it, in order to stimulate motivation and make the new experience valuable to the learner (Jawad, 2011). This strategy also contributed to creating differences between the individuals of the control and experimental groups, in favor of the experimental group of the (pragmatists) pattern, as the stage of (crystallizing the concept) in its theoretical dimension, as the owners of this pattern are distinguished by what was presented from the live model, in which the stages of learning artistic performance were explained, as linking the stages of learning performance and the progression from easy to difficult made it integrated and close to reality to a large extent, The pragmatist style is distinguished in its learning by presenting facts and information through focusing on the content. "What gives the competitive learning strategy to students' learning is those sequential steps that make the student have an opportunity to demonstrate what he has learned from a new experience" (Al-Rubaie, 2000). The researcher also attributes the existence of significant differences between the individuals of the control and experimental groups, in favor of the experimental group, to the fact that the second (practical) dimension of evolutionary competition, which is in two stages (active experimentation - tangible material experiences), was applied in this dimension, which was explained and presented in the theoretical dimension. This dimension includes processing the information presented within the curriculum in the style of developmental competition, in which the members of the experimental group (the practical ones) are able to approach solving the problems they face in a creative way and style of thinking to achieve success in the educational process. "Those who have this style tend to

rely on the practical experience of the experience in order to help the learner to recognize how the experience works, so he learns it and it becomes part of his cognitive structure. This is evident in the answer to the question (How does the experience work?)" (Qatami & Qatami, 2000). Also, the researcher attributes the significant differences in the results in the post-test for the control and experimental groups and the superiority of the experimental group in all the research variables for the (theoretical) style to the method followed by using developmental competition. It is characterized by seriousness and vitality, in addition to the continuous and mutual interaction between the members of the group and the teacher on one hand, and between the members of the group with each other on the other hand. This made the members of the experimental group the focus of the educational process, and this led to the development of the creative thinking of the experimental group and learning the artistic performance of the long dress activity for them, as the (theorists) style is distinguished by "learning through exploration and searching for possibilities and trial and error, as well as their love for experimentation and examining their experiments practically, as well as applying what they learned in new situations and adopting what they learn and modifying it by asking questions such as (what if)" Hussein et al. (2018). The fourth stage of developmental competition (tangible material experiences) operates according to this method, as this stage represents the pattern (theorists) who try to prove themselves and bring out their inner energies, which learners cannot bring out with the usual educational methods and approaches, because the student is under the command style and all that he does is a specific duty that he performs in any way without any interest. "This stage represents John Dewey's idea that the learner works as a researcher and scientist. Here he begins to innovate and create, so the learner possesses sufficient information and has the new skill after training, and therefore he can expand the use of experience to include the following: (putting out other possibilities, creating new patterns of experience, new uses in life)" (Ajl, 2010). Also, "the competitive learning strategy makes the educational situation dynamic and interactive between the teacher and the student, as well as between the students themselves" (Da'mas, 2008). Here it becomes clear that the curriculum prepared using developmental competition has significantly increased the levels of the experimental group in creative thinking and learning artistic performance, and in all learning styles. A curriculum built on a sound, effective, and reliable teaching method yields tangible positive results in skills learning. A study by Serwe-Pandrick et al. indicates that integrating

reflective thinking into physical education enhances motor learning and cognitive understanding, and improves students' skill performance (Serwe-Pandrick et al., 2023). A study by Dupri et al. (2023) demonstrated that using discovery learning models in physical education lessons significantly contributes to developing learners' creative thinking skills (Dupri et al., 2023). A study by Dupri et al. (2024) confirmed that different thinking styles among students are directly related to the development of creative thinking skills in the physical education environment (Dupri et al., 2024).

4. Conclusions and recommendations

4.1. Conclusions

Based on the results obtained, the researcher concluded the following:

1. It is concluded from the results that the educational units based on the developmental competition strategy according to learning styles achieved remarkable effectiveness and superiority in developing mental abilities (creative thinking) and (technical performance of the long jump) among the experimental group, compared to the usual method (control group).
2. The results showed that the students in the pre-test of both groups were suffering from low levels of creative thinking, but after the application of the experiment, a real breakthrough occurred that made all the patterns in the experimental group.
3. The results showed that the control group (which studied in the conventional way) was affected by the developmental competition strategy according to the learning styles in creative thinking. This prompted the students of the experimental group (especially the reflective and theoretical styles) to successfully cross this hypothetical line, which means that they mastered the motor stages (approach, rise, fly, land).

Author's declaration

Conflicts of interest

None.

We confirm that all tables and figures in this article are ours and written by the researchers themselves.

Ethical-clearance

This manuscript approved by Al-Madhatiya Preparatory School for Girls, Babil Education Directorate on (2026/01/10).

Author's contributions

All contributions to this study were carried out by the researchers **Mayada Hassan Hamza Hassan**, who conducted the study procedures, collected and organized the data, participated in the implementation of the experimental program, and contributed to drafting the manuscript; and who developed the research idea, designed the study, supervised the research procedures, interpreted the results, and reviewed and finalized the manuscript and Statistics, with the assistance of a number of experts: **Aya Hasan** in Translation.

Facilitating the task

This study was supported by the Al-Madhatiya Preparatory School for Girls, Babil Education Directorate.

Roles of researcher in the research

Researcher: Mayada Hassan Hamza a was responsible for participating in the implementation of the study procedures, collecting and organizing the data, assisting in conducting the experimental program, contributing to the interpretation of the results, and assisting in drafting the manuscript, and for the conceptualization of the research idea, study design, literature review, supervision of data collection and experimental procedures, interpretation of the results, reviewing the manuscript, and final revision.

Funding statement

This research received no external funding.

Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Appendix (1) Sample Learning Unit Based on the Developmental Competition Strategy and Learning Styles

- Unit Title: Learning and Mastering the Long Jump Skill Through Developmental Competition.
- Target Audience: First-year students at the College of Physical Education and Sports Sciences, University of Babylon.
- Unit Duration: 45–50 minutes.

Part and time	Educational and procedural content	Integration of learning styles and creative thinking	Implementation mechanism and evolutionary competition strategy
Behavioral objectives	1. Cognitive: Understanding the technical phases of the performance. 2. Motor: Successfully applying approach, takeoff, flight, and landing techniques. 3. Psychomotor: Developing achievement motivation and continuous self-competition.	The objectives address the cognitive aspect (mental analysis and creative thinking) and the motor aspect (practical and physical application and neuromuscular coordination).	The objectives were formulated to guide the learner from understanding and comprehending the motor requirements to attempting to embody and develop them progressively through the stages of competition.
Introductory and preparatory section (5 minutes)	- o Organizing student attendance and taking absences. - o General and specific warm-up exercises to prepare the joints and muscles involved in jumping (legs, back, and torso).	• Stimulating strategic and creative thinking. • Preparing students' auditory and mental faculties to grasp the nature of the upcoming physical change.	– Comprehensive mental and physical preparation. – Posing thought-provoking, stimulating questions such as: 'How does a gradual increase in speed during approach increase flight power without making a plane line error?'
Educational and presentation segment (10 minutes)	- o A brief technical and verbal explanation of the four phases of the jump. - o A perfect live demonstration illustrating arm and leg movements, takeoff angles, and physical balance.	• Auditory style: Verbal explanation and timing of the performance steps. • Visual style: Presentation of sequential images and diagrams of body movement. • Practical/Theoretical style: Discussion of the reasons for success and failure in movement.	– Divide the students into flexible groups. – Provide an opportunity for a simple preliminary and exploratory performance of the skill in order to break down the barrier of fear and familiarize them with the application environment.
Practical and applied part (25 minutes)	1. Work is distributed across 4 stations: 2. Approach and speed control station. 3. Single-foot takeoff station. 4. Flight and aerodynamic stability station. 5. Safe landing station with knees bent.	• Complete integration of motor and practical skills through station-based training. • Development of creative problem-solving skills (such as independently adjusting approach steps to avoid skipping the board). • Enhancement of confidence and self-motivation.	– Students will be divided into three levels: (A) Beginner, (B) Intermediate, and (C) Advanced. – Fair internal competition will be maintained among students of similar levels to prevent discouragement. – Wins will be based on the gradual individual improvement rate, not the total distance covered. – Outstanding students will be promoted immediately to the next level as a developmental incentive.
For the concluding part and evaluation (5–10 minutes)	1. Conduct a mini-competition to document and solidify progress. 2. Provide group and individual feedback. 3. Perform relaxation and calming physical exercises to restore normal heart rate. 4. Dismiss in an orderly fashion.	• A summative assessment that reinforces students' theoretical and analytical skills regarding their accomplishments. • Enhancing the psychological and emotional satisfaction associated with the success of their physical and mental efforts.	– A comprehensive and direct assessment of progress throughout the unit. – Recognition of students who achieved the highest rate of advancement across levels to foster a spirit of positive, self-directed competition.

اثراستراتيجية التنافس التطوري وفقا لاساليب التعلم في التفكير الابداعي والاداء الفني للوثب الطويل لدى طلبة الجامعة

ميادة حسن حمزة حسن

اعدادية المدحتية للبنات مديرية تربية بابل

ملخص البحث :

يتناول هذا البحث التطورات الحديثة في العملية التعليمية التي انتقلت فيها العملية التعليمية من التركيز على المعلم كمصدر رئيس للمعلومة إلى جعل المتعلم محوراً أساسياً في التعلم، من خلال توظيف استراتيجيات تعليمية حديثة تعزز التعلم الفعال وتنمي الجوانب المعرفية والمهارية. وتبرز أهمية الدراسة في قياس أثر استراتيجية التنافس التطوري في تنمية التفكير الابداعي وتحسين الأداء الفني لفعالية الوثب الطويل لدى طلاب كلية التربية البدنية وعلوم الرياضة، وتتمثل مشكلة البحث في الصعوبات التي يواجهها الطلبة في تعلم المهارات الحركية، وخاصة المهارات التي تتطلب الربط بين مراحل الأداء الفني، إضافة إلى ضعف الفهم السطحي للمعلومات وعدم القدرة على توظيفها بشكل فعال في الأداء العملي، وهدف البحث إلى قياس أثر استراتيجية التنافس التطوري وفق أنماط التعلم في تنمية التفكير الابداعي وتحسين الأداء الفني لفعالية الوثب الطويل، واستخدمت الدراسة المنهج التجريبي بتصميم المجموعات المتكافئة ذوات المجموعتين (الضابطة والتجريبية) مع الاختبارين القبلي والبعدي، وشملت العينة طلاب المرحلة الأولى في جامعة بابل للعام الدراسي 2025-2026 والبالغ عددهم (164) طالباً وطالبة موزعين على أربع شعب دراسية، وأظهرت النتائج وجود فروق معنوية لصالح الاختبار البعدي في جميع أنماط التعلم، إذ حقق نمط المتعلمين النظريين أعلى نسبة تحسن في التفكير الإبداعي من متوسط (78.667) إلى (125.667) بنسبة 59.7%، كما تحسن الأداء الفني للوثب الطويل من (2.333) إلى (5.333) بنسبة 128.6%، مما يدل على فاعلية استراتيجية التنافس التطوري في تحسين المتغيرات قيد الدراسة، واستنتجت الدراسة أن استراتيجية التنافس التطوري كان لها أثر إيجابي واضح في تنمية التفكير الابداعي وتحسين الأداء المهارية، وأوصت بإمكانية توظيفها في تدريس فعاليات الساحة والميدان، واعتماد أدوات قياس التفكير الابداعي المطورة، بما يسهم في تحسين جودة التعليم الجامعي وتحقيق مخرجات تعلم أفضل في ضوء مبدأ التعليم الجيد.

الكلمات المفتاحية: التنافس التطوري - التفكير الابداعي - فعالية الوثب الطويل