AN EDUCATIONAL PROGRAM ACCORDING TO VISUAL THINKING NETWORKS FOR FLEXIBLE THINKING AND SOME BASIC FOOTBALL SKILLS

Haidar Aayed Jabbar

Researcher: Assistant Lecturer, General Directorate of Education in Al-Qadisiyah, Iraq

ABSTRACT:

The significance of this research stems from the implementation of an educational program designed around visual thinking networks, aimed at assessing its impact on flexible thinking and certain fundamental football skills among first-grade students at Al-Isra Boys Middle School, located in the Diwaniya district and governed by the Diwaniya Directorate of Education, during the 2022-2023 academic year. The total student body consists of 134 individuals, distributed across four classes. To align with the field application, the researcher employed an experimental design involving two equivalent groups. A sample of 32 students was randomly selected from classes C and D, with class D serving as the experimental group and class C as the control group. The research involved utilizing the required tools and materials to implement the study steps, which included creating an educational program based on visual thinking networks, conducting a preliminary experiment, and carrying out the main field experiment. This process involved pre-tests, applying to the educational program, and conducting post-tests. The findings indicate that students benefit from an educational program centered on visual thinking networks to enhance their flexible thinking and fundamental football skills. The researcher recommends incorporating modern educational programs in lectures due to their crucial role in developing flexible thinking and improving basic football skills.

KEYWORDS: *Educational Program, Visual Thinking, Flexible Thinking, Basic Skills, Football.*

INTRODUCTION:

Effective scientific planning is fundamental to success across all specialized fields, including sports. Scientific research continues to make significant contributions to various aspects of life. Developing basic skills plays a vital role in shaping individuals physically, psychologically, and socially. Education, as a whole, has become the center of attention for many researchers and educators. The teacher's role has expanded beyond merely explaining and clarifying through traditional methods. Teachers are now responsible for designing educational strategies that leverage modern teaching approaches to achieve targeted objectives.

Numerous modern teaching methods contribute to the success of educational curricula, enriching the learning process by stimulating students' minds, enhancing focus during lessons, and improving comprehension, memory, and recall. Those tasked with addressing human-related challenges face the difficulty of accurately diagnosing problems, identifying gaps, proposing effective solutions, and ensuring their applicability in real-world contexts.

Visual Thinking Networks (VTNs) encompass several metacognitive strategies, including modern cognitive representation techniques, aimed at enhancing student learning. VTNs help students organize their knowledge by constructing conceptual networks that use verbal or visual elements to represent cognitive relationships, fostering active engagement in the learning process.

Thinking, in its various forms, represents how individuals receive, encode, store, and retrieve knowledge, experiences, and information, which is then uniquely expressed through sensory, semi-visual, or symbolic means. Uncovering creative abilities early on is essential, particularly among students involved in sports activities and extracurricular competitions. Their motor responses during lessons can be both new and varied, and providing guidance, support, and constructive feedback can enhance the learning process and help achieve goals more efficiently in terms of time, effort, and cost.

Football, as a sport, demands both physical and technical skill development. Beginners and students need to learn and master the technical aspects of the game through modern teaching methods, suitable strategies, and innovative techniques, which help accelerate the learning process and reduce the time required to develop proficiency.

This research focuses on the development of an educational program based on visual thinking networks, emphasizing its role in fostering flexible thinking and enhancing basic football skills. The theoretical significance of this study lies in offering a knowledge framework for educators teaching first-grade students in Diwaniya district middle schools. It addresses the following key areas:

- The importance of modern teaching programs in improving cognitive and physical skills.
- The potential of flexible thinking to enhance problem-solving abilities and football skills.

The practical significance of this study is reflected in:
- Its results and recommendations, which may help answer questions regarding flexible thinking and basic football skills for first-grade students.
- Identifying appropriate goals and methods that contribute to the development of flexible thinking and basic football skills.
- Highlighting the importance of using a learning program based on visual thinking networks and raising awareness among teachers of the need to adopt it as a modern program.

Through monitoring the work of many middle school teachers and conducting some initial tests on first-grade students, the researcher found weaknesses in the students' flexible thinking and football skills. The researcher believes this is due to the traditional teaching style used by the teacher, where the teacher is responsible for all aspects of the lesson. This traditional method does not align with modern developments in education, which now require the use of contemporary teaching methods and programs. Today's students have rapidly evolving needs, sometimes outpacing the technological developments that compete for their attention. Therefore, the researcher sought to address this issue by using an educational program based on visual thinking networks. This study aims to answer the following question:

RESEARCH QUESTION:

Does an educational program based on visual thinking networks have a positive effect on flexible thinking and basic football skills for first-grade middle school boys in the Diwaniya district of Al-Qadisiyah Governorate?

RESEARCH OBJECTIVES:

1. To develop an educational program based on visual thinking networks for first-grade students at Al-Isra Boys Middle School in the Diwaniya district of Al-Qadisiyah.
2. To identify the effect of the educational program on flexible thinking and some basic football skills for first-grade students at Al-Isra Boys Middle School.
3. To compare the effect of the educational program on the experimental group versus the control group regarding flexible thinking and basic football skills.

RESEARCH METHODOLOGY:

2-1 Research Method:

The researcher used the experimental method, designing two equivalent groups (control and experimental) with pre-tests and post-tests to suit the nature and problem of the research.

2-2 Research Population:

The research population consisted of first-grade students at Al-Isra Boys Middle School in the Diwaniya district of Al-Qadisiyah during the 2022-2023 academic year. The total number of students was 134, divided into four classes. The research sample included 32 students from classes C and D, selected randomly by lottery. Class D became the experimental group, and class C became the control group. The sample size represents 23.88% of the total population.

2-2-1 Homogeneity and Equality of the Research Sample:

The researcher conducted homogeneity and equality tests on the research sample in the dependent variables, as shown in Table 1.

Table 1: Homogeneity and Equality Between the Control and Experimental Groups

Variables	Control Group		Experimental Group		t	Significance	Levene's Test	Significance
	Mean	Std.	Mean	Std.				
Flexible Thinking	11,867	0,990	11,733	1,100	0.349	0.730	1.160	0.296
Control	2,980	0,659	2,847	0,640	0.562	0.579	1.569	0.113
Passing	3,180	0,573	3,047	0,601	0.622	0.539	0.014	0.908
Dribbling	2,713	0,589	2,647	0,610	0.304	0.763	0.242	0.628

2-3 Tools, Instruments, and Equipment Used in the Research:

2-3-1 Data Collection Tools:
1. Questionnaire
2. Observation
3. Testing and Measurement

2-3-2 Instruments and Tools:
1. Measuring tape
2. 10 footballs
3. Chalk
4. Football field
5. Hand calculator
6. Personal computer (LabTub)
7. Stationery (papers and pens)
8. Forms for recording test results

2-4 Tests Used in the Research:

2-4-1 Flexible Thinking Test Description:

The flexible thinking scale consists of 30 items, with multiple-choice answers. Each item has one correct answer and one incorrect answer, where the correct answer is scored as 1 and the incorrect answer as 0.

2-4-2 Tests for Some Basic Football Skills:

Test 1: Stopping the Ball (Control)
- Test Objective: To assess the technical performance of the ball control skill.
- Required Equipment: Legal footballs, measuring tape, and chalk.
- Procedure:
  - The test area is marked as shown in figure (1).
  - The student stands behind the designated test area.
  - The teacher, holding the ball, stands 6 meters away from the test area (a square with dimensions 2x2 meters). Upon the start signal, the teacher throws a high ball to the student, who steps forward from the starting line into the test area and tries to stop the ball using any part of the body except the arms, then returns to the starting line and repeats the process.
  - The student must stop the ball behind the line and within the designated area, with one foot remaining inside the test area.
  - If the teacher misthrows the ball, the attempt does not count, and it must be repeated (throwing the ball using both hands from below).
  - Scoring:
  - Each student gets two consecutive attempts, and the evaluator gives a score for the best attempt.
  - The total score is 10 points.

▪ The student's score is the average of the six evaluators' scores.

Test 2: Passing the Ball Towards a Circle on the Ground
- o Test Objective: To assess the technical performance of the passing skill.
- o Required Equipment: A marked test area, two footballs, measuring tape, and chalk.
- o Procedure:
- • A circle with a 2-meter diameter is drawn on the ground, with the center of the circle being the point where the student will aim. The distance between the starting line and the circle is 20 meters, as shown in figure (2).
- • The student stands behind the starting line and kicks the ball in the air with either foot, attempting to land the ball inside the circle.
- o Scoring: Each student gets two consecutive attempts, and the evaluator gives a score for the best attempt.
- • The total score is 10 points.
- • The student's score is the average of the six evaluators' scores.

Test 3: Zigzag Dribbling with the Ball
- o Test Objective: To assess the technical performance of the dribbling skill.
- o Required Equipment: Legal footballs, measuring tape, and five cones or appropriate-height obstacles.
- o Procedure:
- ▪ The test area is marked.
- ▪ The student stands behind the starting line, with the distance between each cone being 2.70 meters, and the total distance covered is 27 meters for both forward and backward dribbling.
- ▪ Upon the start signal, the student dribbles the ball with their foot through the five cones, going back and forth as shown in figure (3).
- o Scoring:
- ▪ Each student gets two consecutive attempts, and the evaluator gives a score for the best attempt.
- ▪ The total score is 10 points.
- ▪ The student's score is the average of the six evaluators' scores.

2-5 Scientific Validity of the Tests:

First: Validity

➢ Face Validity:

The researcher obtained face validity, which is based on the extent to which the test represents the phenomenon it is intended to measure (flexible thinking, some basic football skills—such as control, passing, and dribbling). This was done by distributing a questionnaire to six experts, who unanimously agreed (100%) on the validity of the test in representing the intended phenomenon. After collecting and processing the data, the researcher used the Chi-Square (Ka2) test, which showed that both tests achieved values higher than the tabular Chi-Square value of 3.84 at a degree of freedom of 1 and a significance level of 0.05. Table (2) shows the validity of the tests used in the research.

Table (2): Validity of Tests for Flexible Thinking and Some Basic Football Skills

Test	Valid		Ka^2		Significance
	suitable	Not suitable	Calculated	Tabular	
Flexible Thinking	6	0	6	3.84	Significant
Ground Ball Control	4	2	0.67	3.84	Not Significant
Air Ball Control in a (2x2) m Square	6	0	6	3.84	Significant
Control Using the Inside of the Foot (in the Air)	5	-	5	3.84	Significant
Wall Passing (8 meters for 30 seconds)	2	4	0.67	3.84	Not Significant
Passing the Ball to a Small Target (15 meters)	3	3	0.00	3.84	Not Significant
Passing the Ball Towards a Circle	6	0	6	3.84	Significant
Zigzag Dribbling (27 meters)	6	0	6	3.84	Significant

➢ Discriminatory Power of the Flexible Thinking Scale:

To identify the discriminatory power of the flexible thinking scale under investigation, which was applied to a sample of 65 students from the first grade of Al-Israa Intermediate School in Al-Diwaniyah Governorate, the researcher conducted a comparison of the test results for the pilot study sample for each item of the scale. The (t-test) was used for two independent samples after dividing them into a high group and a low group (27%). When comparing the calculated (t) values, which ranged between (4.294 - 15.927) and the table value of (2.091) at a degree of freedom (34) and a significance level (0.05), the statistically significant t-values were considered as an indicator of the discriminatory power of the flexible thinking scale.

Second: Reliability

The researcher sought to determine the reliability of the tests in the study (flexible thinking and some basic football skills—control, passing, and dribbling). The test-retest method was used, with the flexible thinking test repeated after 14 days and the football skills tests repeated after 7 days. After calculating the Pearson correlation coefficient between the

two sets of test scores, the results showed a significant correlation. The calculated t-test value for the significance of the correlation was greater than the tabular value of 2.228 at a degree of freedom of 12 and a significance level of 0.05, indicating that the tests have high reliability. Table (3) shows the reliability of the tests.

Third: Objectivity
The tests were conducted under the supervision of referees from the assisting team specialized in physical education and sports sciences. The same conditions and testing procedures were maintained throughout the process. After collecting the results and data, they were statistically analyzed using Pearson's simple correlation coefficient to determine the consistency between the scores given by the neutral referees. The correlation coefficient values were significant when compared to the tabular value of 0.63 at a degree of freedom of 12 and a significance level of 0.05. This indicates that all the tests have a high degree of objectivity, as their values are higher than the tabular value, confirming the objectivity of the tests, as shown in Table (3).

Table (3): Reliability of the Tests Used on the Pilot

Test	Reliability Coefficient	Significance	Objectivity Coefficient	Statistical Significance
Flexible Thinking	0.980	Significant	0.899	Significant
Ground Ball Control	0.956	Significant	0.951	Significant
Passing the Ball to a Circle	0.933	Significant	0.944	Significant
Zigzag Dribbling (27 meters)	0.904	Significant	0.936	Significant

2-6 Field Procedures of the Research:
2-6-1 Pre-Test:
The pre-test was conducted on the research sample (control and experimental groups) on Tuesday, December 28, 2022, at 9:00 AM in the playground of Al-Isra Boys Middle School. All conditions related to the tests were standardized, including location, time, tools used, method of implementation, and the assisting team, to ensure the same or similar conditions for the post-test.

2-6-2 Educational Program Based on Visual Thinking Networks:
After reviewing sources and previous studies, the researcher implemented the educational program based on visual thinking networks on the research sample. Following the pre-tests, the program was applied with two educational sessions per week. The researcher designed the educational units for the program, following the appropriate steps and taking into account the students' level. The educational program consisted of 16 units spread over 8 weeks. The breakdown of each weekly session was as follows:
- Preparatory Section: Duration of 8 minutes, representing 20% of the total session time, with a total of 96 minutes for the entire program (over 12 educational sessions).
- Main Section: Duration of 28 minutes, representing 70% of the total session time, with a total of 336 minutes for the entire program (over 12 educational sessions).
- Concluding Section: Duration of 4 minutes, representing 10% of the total session time, with a total of 48 minutes for the entire program (over 12 educational sessions).

2-6-3 Post-Test:
The post-test was conducted on Monday, January 22, 2023, after the completion of the 8-week educational program based on visual thinking networks. The researcher ensured that the same conditions and procedures used in the pre-test were maintained for the post-test.

2-7 Statistical Analysis:
The data obtained from the research were processed using appropriate statistical methods that align with the research objectives. The data analysis was conducted using the SPSS (Statistical Package for the Social Sciences) software.

RESULTS, ANALYSIS, AND DISCUSSION:

3-1 Presentation of the Results of Differences in Flexible Thinking and Basic Football Skills for the Control Group (Pre- and Post-Test Results):
Table (4) shows the differences between the pre- and post-tests of the control group in terms of flexible thinking and basic football skills.

Table (4): Differences Between the Pre- and Post-Tests for the Control Group in Flexible Thinking and Basic Football Skills

Variable	Pre-Test		Post-Test		t-value	Significance Level
	Mean	Std.	Mean	Std.		
Flexible Thinking	11,867	0,990	16,067	1,033	14,189	0.0000

Ball Control	2,980	0,659	4,800	0,775	7,048	0.0000
Passing	3,180	0,573	4,467	0,516	7,120	0.0000
Dribbling	2,713	0,589	4,067	0,594	6,460	0.0000

The results presented in Table (5) show significant differences in flexible thinking and basic football skills (control, passing, and dribbling) between the pre- and post-tests of the control group. Using the paired t-test, the calculated t-values (14.189, 7.048, 7.120, 6.460) are greater than the tabular value of 2.145 at a degree of freedom of 14 and a significance level of 0.05, indicating that the differences are significant in favor of the post-test.

3-2 Presentation of the Results of Differences in Flexible Thinking and Basic Football Skills for the Experimental Group (Pre- and Post-Test Results):
Table (5) shows the differences between the pre- and post-tests of the experimental group in terms of flexible thinking and basic football skills.

Table (5): Differences Between the Pre- and Post-Tests for the Experimental Group in Flexible Thinking and Basic Football Skills

Variable	Pre-Test		Post-Test		t-value	Significance Level
	Mean	Std.	Mean	Std.		
Flexible Thinking	11,733	1,100	18,600	0,910	17,664	0.0000
Ball Control	2,847	0,640	5,933	0,458	14,929	0.0000
Passing	3,047	0,601	5,467	0,640	9,358	0.0000
Dribbling	2,647	0,610	5,267	0,594	10,995	0.0000

The results presented in Table (5) show significant differences in flexible thinking and basic football skills (control, passing, and dribbling) between the pre- and post-tests of the experimental group. Using the paired t-test, the calculated t-values (17.664, 14.929, 9.358, 10.995) are greater than the tabular value of 2.145 at a degree of freedom of 14 and a significance level of 0.05, indicating that the differences are significant in favor of the post-test.

3-3 Presentation of the Results of the Post-Test Differences in Flexible Thinking and Basic Football Skills Between the Control and Experimental Groups:
Table (6) shows the differences in the post-test results between the control and experimental groups in flexible thinking and basic football skills.

Table (6): Differences in the Post-Test Results Between the Control and Experimental Groups in Flexible Thinking and Basic Football Skills

Variable	Control Group		Experimental Group		t-value	Significance Level
	Mean	Std.	Mean	Std.		
Flexible Thinking	16,067	1,033	18,600	0,910	7,127	0.0000
Ball Control	4,800	0,775	5,933	0,458	4,879	0.0000
Passing	4,467	0,516	5,467	0,640	4,710	0.0000
Dribbling	4,067	0,594	5,267	0,594	5,536	0.0000

The results presented in Table (6) show significant differences in the post-test results between the control and experimental groups in terms of flexible thinking and basic football skills (control, passing, and dribbling). The calculated t-values (7.127, 4.879, 4.710, 5.536) are greater than the tabular value of 2.048 at a degree of freedom of 30 and a significance level of 0.05, indicating that the differences are significant in favor of the experimental group.

3-4 Discussion of Results:
Based on the results shown in Tables (5), (6), and (7), it is evident that there is an improvement in flexible thinking and basic football skills among first-grade students at Al-Isra Boys Middle School in the Diwaniya district for the 2022-2023 academic year. This improvement can be attributed to the teaching method used in the control group between the pre- and post-tests, with the differences favoring the post-test.

The results for the experimental group in Table (5), which underwent the educational program based on visual thinking networks, showed more significant improvement in the post-test compared to the control group. The diverse and interactive learning methods introduced through the visual thinking networks program encouraged students to move away from rigid traditional responses and apply flexible thinking strategies. This shift in thinking likely resulted in improved football skills.

The researcher attributes the significant differences in flexible thinking and skill performance between the two groups to the structured and well-designed educational program based on visual thinking networks. This program included concepts that aimed to achieve student engagement, cooperation, and the identification of key factors influencing flexible thinking.

Moreover, the program helped students replace negative thoughts and incorrect responses with more appropriate and flexible cognitive approaches.

These factors created a positive learning environment that enhanced the students' understanding of the elements affecting their flexible thinking and football skills. As a result, the experimental group demonstrated greater benefit from the program compared to the control group.

CONCLUSIONS AND RECOMMENDATIONS:

4-1 Conclusions:
1. The educational program based on visual thinking networks had a positive effect on developing flexible thinking among first-grade students.
2. The program also positively influenced the acquisition and improvement of some basic football skills among first-grade students.

4-2 Recommendations:
1. Physical education teachers should be familiar with multiple educational programs and use the most appropriate one for specific learning situations.
2. The educational program based on visual thinking networks should be applied to teach other skills, mental abilities, and motor capabilities.

REFERENCES:
[1] Al-Wazir, A. A., & Taha, A. M. (1999). *The volleyball coach's guide: Tests / planning / records* (1st ed.). Cairo, Arab Thought House.
[2] Abdul Hafeez, I. M. (2002). *Psychological guidance in sports*. Book Publishing Center.
[3] Al-Khashab, Z. Q., et al. (1999). *Football* (2nd ed.). University of Mosul, Dar Al-Kutub for Printing and Publishing.
[4] Aidan, A. S. (2019). *The effect of specific exercises on developing flexible thinking and intuitive reasoning and their relation to tactical behavior in football* (Master's thesis). Al-Muthanna University.
[5] Ibrahim, M. (1994). *Football skill and tactical preparation*. Cairo, Arab Thought House.
[6] Stein, M. T. (n.d.). *Stimulating creativity* (Vol. 1). New York, Academic Press.