Tools for forming a healthy lifestyle and improving the types of thinking of schoolchildren when teaching chess

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Abstract

Purpose: to conduct an analysis and identify patterns in the formation of a healthy lifestyle and types of thinking in younger students during chess classes.

Methods: analysis of scientific and methodological literature on the topic; pedagogical observation, pedagogical testing, methods of mathematical and statistical analysis.

Results: At the end of the pedagogical experiment, final tests were carried out. In accordance with the data obtained on the test to determine the level of development of visual-effective thinking in the control group, the indicator was recorded7.5±0.9 points, while in the experimental group8.2±1.1 points. The difference between the indicators is statistically significant. The coefficient of variation is within 12 and 13 percent, which indicates a satisfactory spread of the respondents' results. (Table 2)

Conlcusion: Thus, the inclusion of chess in the educational process of primary school allows to maximally reveal the child's potential inherent in this ancient game. Teaching the basics of chess promotes the development of skills of orientation on a plane and spatial thinking; stimulates analytical and synthetic activity; forms the skills of memorization, comparison, generalization and foreseeing the consequences of one's actions; improves logical thinking; and also develops valuable qualities such as persistence, attentiveness, independence, patience, creativity and flexibility.

Keywords: chess players, preparatory stage, physical training, technical and tactical training

Introduction

The world community has reached a new level of development, characterized by the transformation of moral and social aspects. To ensure progress, qualified personnel with a high level of education, significant creative potential and original thinking are needed, who are able to effectively contribute to scientific and technological development.

The education and upbringing of school-age children deserves meticulous study and continuous improvement. Already at the initial stages of school education, students master basic techniques of logical analysis, such as comparison, systematization and generalization. In this regard, primary school teachers are tasked with creating conditions for the formation and strengthening of logical thinking in children. This contributes to the development of their ability to argue their conclusions, form correct conclusions and independently assimilate new knowledge.

The relevance of research. The relevance of this topic is due to the lack of a universal system of teacher work on the development of key thought processes, including synthesis, analysis, analogy and abstraction. This omission limits the ability of teachers to effectively implement the tasks of logical development of students.

Chess occupies a central place in the process of forming thinking. Its importance in educational practice is difficult to overestimate, since chess is a multifunctional discipline that promotes the development of both general culture and logical-creative potential. This game is a clear example of logical construction: all moves are interconnected, subject to a single strategy and determined by current conditions. Students' logical thinking develops with each game and lesson, which makes the process natural and unobtrusive.

That is why the problem of introducing chess into the school curriculum has become relevant for the state educational policy. Research by scientists in the field of pedagogical science has shown that schoolchildren who play chess demonstrate higher academic results. This is due to the development of planning, analysis and problem solving skills in children, which significantly increases their intellectual level.

The object of the research the process of organizing chess teaching for primary school students.

The subject of the research is to study the development of types of thinking through teaching the game of chess.

The purpose of the study— to conduct an analysis and identify patterns in the formation of a healthy lifestyle and types of thinking in younger students during chess classes.

Research objectives: to determine methods and approaches to the formation of types of thinking in primary school students;

to study the possibilities of chess as a means of developing a healthy lifestyle;

to experimentally test the effectiveness of the improved chess teaching method.

Wilhelm Steinitz, the first world champion (1886–1894), in his work “Chess as a Mental Training and Methods of Improvement” claimed that chess training has a direct effect on the physical condition of players and helps to increase their life expectancy. He noted that many outstanding chess masters reached old age while maintaining mental clarity until the end of their lives. According to calculations, the average life expectancy of chess enthusiasts was the highest compared to other groups of people whose lives were analyzed statistically.

Steinitz emphasized that experience teaches a chess player to avoid habits that are harmful to health, since they reduce his ability to play and improve himself. In order not to lose his playing form, he considered it necessary to strictly limit actions that are harmful to his overall physical condition.

Max Euwe, the fifth World Champion (1935–1937), in his article “Two Matches with Alekhine” concluded that preparation for a match should include three aspects:

- physical;
- theoretical;
- practical.

In terms of physical training, he noted: "In almost any game, you can achieve a winning position, but if you lack clarity of thought at the decisive moment, all previous efforts may be useless." He pointed out that a chess player needs strong nerves, and therefore physical training is a must, although not always the main part of training. Euwe systematically went in for swimming, boxing, played tennis, did gymnastics and took cold showers every day, even in winter.

M.M. Botvinnik believed that the key moment was the preparation of chess players for competitions. He studied various methods and especially emphasized the individual approach, emphasizing the importance of maintaining inner peace and harmony not only during tournaments and games, but also in the process of preparing for them.

Thinking is a process of cognitive activity of an individual, characterized by a generalized and indirect perception of reality.

There are the following types of thinking:

concept is a type of thinking in which general and important characteristics of objects and phenomena are expressed. For example, each triangle has three sides, but different length, area, angle and shape. However, the triangle figure is determined only by the first criterion, which distinguishes it from other geometric shapes: trapezoid, circle, square.

An assertion is a type of thinking that includes an assertion or denial of a certain position regarding a phenomenon, object or their qualities. Through assertions, the meaning of concepts can be conveyed. The ability to correctly express one's opinion about a phenomenon or object indicates that the child understands this object or phenomenon.

Inference is a form of thinking by which a person is able to come to a new conclusion by comparing and thinking about a particular statement.

There are two methods of inference: deduction and induction.

Induction is a method by which a person moves through reasoning from particular conclusions to a general conclusion.

Deduction is the opposite of induction, in which a person, by reasoning, comes from a general conclusion to a particular one.

According to type, there are three types of thinking:

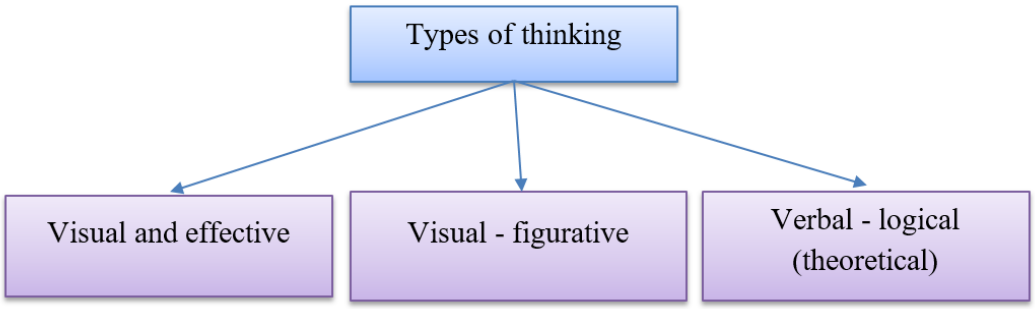
1) visual - effective;
2) visual - figurative;
3) verbal - logical (theoretical). (Figure

Results and discussion

The pedagogical experiment was conducted in comprehensive schools No. 2 and No. 15 of the city of Chirchik on the basis of a group of first and second grade students in the sport "Chess", which is controlled by the children's school "Barkamol Avlod". The number of students in the control and experimental groups is 20 people. The experiment was conducted from September 2024 to January 2025. The control group was trained using the standard methodology for basic chess training groups. The experimental group used an improved chess teaching method aimed at the formation and development of thinking types.

The analysis of the research results was carried out using the method of mathematical statistics to determine the difference in two independent samples, namely the Student's t-test. As a null hypothesis, we chose that at the end of the experiment, the types of thinking, namely visual-active, visual-figurative, verbal-logical (theoretical) will be formed and developed at the same level. As an alternative hypothesis, the

Fig 1. Types of Thinking (by Jerome Seymour Bruner)



fact of inequality in the levels of development of types of thinking is put forward, therefore in the difference between the control and experimental groups [5].

At the beginning of the pedagogical experiment, a confirmatory experiment was conducted. The students of the experimental class, studying according to a specially developed method taking into account the development of types of thinking, and the students of the control group, studying according to the traditional method, were tested to determine the level of development of all three types of thinking: visual-active, visual-figurative and verbal-logical.

The level of visual-active thinking was determined using the "Trace the contour" test. In the test, the student is asked to trace the contours of the chess pieces shown in the picture.

To assess the level of visual-figurative thinking, the test "What's extra here?" was used. Students are offered a series of pictures, which show different objects, and one of them is extra. For example: image

1) a barbell, a tennis ball, a racket and a fly agaric;

2) tennis ball, basketball hoop, spoon, sports shoes;

3) kettlebell, chair, vaulting horse, gymnastic bars.

The child must name the extra object. Help with additional questions is possible, but not with direct prompts.

The test "Divide into groups" was used to assess the level of verbal and logical thinking. Students are asked to look at a card with images of various chess pieces on it. The child, having looked carefully at the picture, must divide the figures into as many groups as possible. The child's task is to name all the figures included in each of the selected groups and the feature by which they are selected (color, shading). Three minutes are allotted to complete the task. (Figure 2)

At the beginning of the pedagogical experiment, entrance tests were carried out. In

Table 1. Test results forthe level of development of types of thinking at the beginning of the pedagogical experiment

N	Purpose of the test	At the beginning of the experiment				t	P
		Control group		Experimental group			
		$\bar{X}_{\pm\sigma}$	V %	$\bar{X}_{\pm\sigma}$	V %		
1	Developmental level test Visual-effective thinking	7.2±0.9	12.2	7.3±0.9	12.6	0.5	≥0.05
2	Developmental level test Visual-figurative thinking	7.5±0.9	11.8	7.5±0.8	11.1	0	≥0.05
3	Developmental level test Verbal-logical thinking	6.7±0.9	12.9	6.6±0.8	12.6	0.4	≥0.05

accordance with the data obtained on the test to determine the level of development of visual-effective thinking in the experimental group, the indicator was recorded7.3±0.9 points, while in the control group7.2±0.9 points. No statistically significant differences were observed. The coefficient of variation is between 12 and 13 percent, indicating a satisfactory spread of respondents' results. (Table 1)

In accordance with the data obtained from the test to determine the level of development of visual-figurative thinking in the experimental group, the indicator was recorded7.5±0.8 points, while in the control group7.5±0.9 points. No statistically significant differences were observed. The variation coefficient is within 11 and 12 percent, indicating a satisfactory spread of respondents' results.

The results obtained from the test to determine the level of development of verbal-logical thinking in the experimental group recorded an indicator6.7±0.9 points, while in the control group6.6±0.8 points. No statistically significant differences were observed. The coefficient of variation was 12.9% in the control group and 12.6 percent in the experimental group, indicating a satisfactory spread of test results.

The main objective of training using the advanced chess teaching method is to achieve optimal overall development of each student based on mastering knowledge, skills and abilities while maintaining the health of children. These tasks should also be solved in the process of studying chess. The program is aimed at developing children's cognitive abilities, so the chess training program contains many tasks for developing memory, attention, perception, development, and thinking. Training using the advanced chess teaching method is based on the didactic principles of the chess education system.

The improved methodology of teaching chess has in its composition a pedagogical principle - teaching at a high level of difficulty. The basis of this principle is the position of L.S. Vygotsky about the zone of proximal development. L.S. Vygotsky said: "... pedagogy should be oriented not on yesterday, but on tomorrow of children's development."

The principle under consideration aims at such a structure of training that is based not on the current (already achieved) level of development of the child, but on the zone of his proximal development, when in order to complete the educational task facing him it is necessary to apply a certain available effort, to be able to use in his own activities the results of the collective work of the class, to show independence.

After five months of using the improved method, improvements in the degree of assimilation of the educational material on chess were

Fig 2. Tests used fordetermining the level of development of each type of thinking

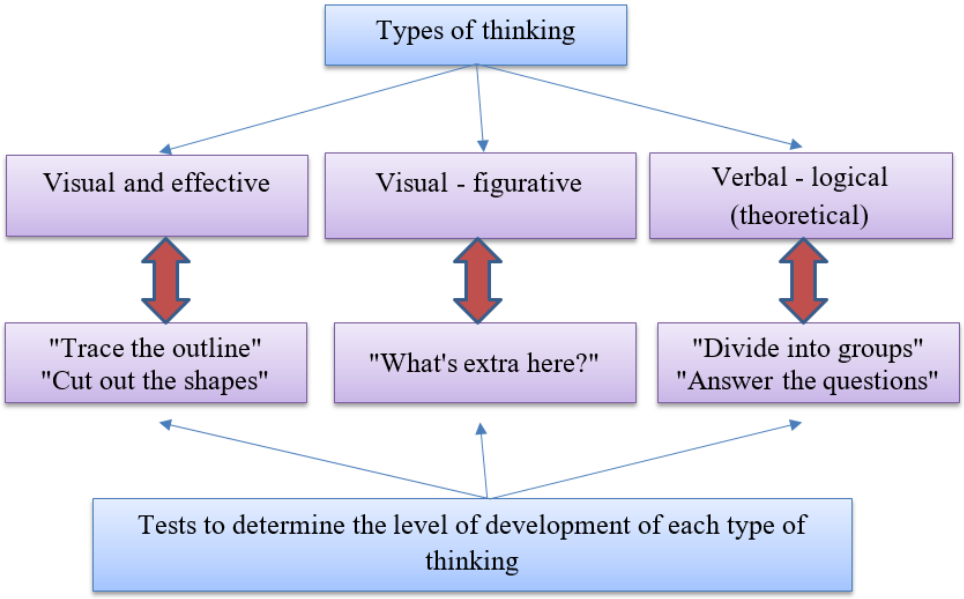


Table 2. Test results forthe level of development of types of thinking at the end of the pedagogical experiment

N	Purpose of the test	At the end of the experiment				t	P
		Control group		Experimental group			
		$\bar{X}$ ±σ	V %	$\bar{X}$ ±σ	V %		
1.	Developmental level test Visual-effective thinking	7.5±0.9	12.6	8.2±1.1	12.9	2,3	≤0.05
2.	Developmental level test Visual-figurative thinking	7.7±0.9	12	8.4±1	12.5	2,3	≤0.05
3.	Developmental level test Verbal-logical thinking	7.3±0.6	8.8	7.8±0.8	10.7	2,2	≤0.05

noticeable in the experimental group. Tests were conducted in the control and experimental groups to determine the level of development of types of thinking.

It is worth noting that the parents of the students were informed about their children's participation in the pedagogical experiment. The parents of the students were provided with full information about the chess training program and were given talks on topics related to pedagogical technologies, different types of thinking and the importance of their formation and development for younger students. After that, the parents expressed their consent for their children to participate in the experiment.

According to the test to determine the level of development of visual-figurative thinking in the control group, the indicator was7.7±0.9 points, while in the experimental group8.4±1 points. The difference between the indicators is statistically significant. The coefficient of variation is within 12 and 13 percent, which indicates a satisfactory spread of the respondents' results.

According to the test to determine the level of development of verbal-logical thinking in the control group, the indicator was recorded7.3±0.6 points, while in the experimental group7.8±0.8 points. The difference between the indicators is statistically significant. The coefficient of variation is 8.8 percent in the control group and 10.7 percent in the experimental group, which indicates a satisfactory spread of the respondents' results.

Conclusion

In primary school, it is necessary not only to lay the foundation of students' knowledge, but also to teach them to think independently and work creatively. Later, the child learns to reason, analyze, establish simple patterns, and draw conclusions in accordance with the laws of logic.

It can be concluded that logical thinking must be developed in early childhood, since from the moment of birth to 7-10 years, the child develops and forms complex systems of general ideas about the surrounding world and lays the foundation for substantive and subject-matter thinking. It follows that a significant place should belong to the wide use of non-standard logical problems in the process of teaching primary school students.

Developmentvisual-effectivethinking in the context of chess can be realized exclusively through the process of analysis, in which, during the selection of solutions, the rearrangement of figures is allowed directly during the mental calculation. The action in chess is the movement of a figure from one square to another, that is, the execution of a game move.Verbal-logicalThinking is actively used both in a chess game (inner speech) and in chess lessons – when arguing solutions to educational problems.

Therefore, rational thinking plays a key role in the process of teaching chess. This was deeply understood by the outstanding Soviet educator V.A. Sukhomlinsky, who emphasized the importance of chess in the formation of a culture of thinking and the intellectual development of primary school students. He stated: “Chess is a great school of consistent logical

thinking. Without it, it is impossible to imagine the full development of mental abilities and memory. Teaching chess should become part of the life of primary school as one of the components of intellectual culture."[8]Moreover, V.A. Sukhomlinsky particularly emphasized that "we are talking specifically about primary school, where the formation of intelligence occupies a central place and requires specific methods and forms of work."

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