

THE IMPACT OF CHESS LESSONS ON FORMATION AND DEVELOPMENT OF THE STUDENTS

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Nowadays global changes are taking place all over the world. Life puts quite different tasks and requirements, the solution of those requires non standard thinking, activism, initiation, self-sufficiency and creativity. And these skills, first of all, are formed during school years. Because of that education has a unique importance in the personal development, thereby new technologies and school subjects emerge. Today we face the fact that the old educational system was changed and the new system is in a formation process.

The most important innovation in education is the introduction of Chess as a mandatory school subject, thereby Armenia became an example for all over the world. Armenians have special attitude towards Chess. Chess is our national pride and heritage. This can be explained as follows: we had a very difficult history, Armenians always faced challenges and always were ready to solve them. And the question was not about having a good or bad life, but live or not to live. And Chess is game of finding solutions on the board. That is why, it is no coincidence, that we are good at Chess.

For the educational system of Armenia the introduction of Chess at schools has a strategic importance not only for effective educational development but also it has a big importance for the personal skills development at a young age.

Chess, as a school subject, has an important role in the educational process, as it develops skills which students need in the modern world. Chess develops memory, thinking, imagination, willpower and creativity. These skills develop intensively at early school age. It should be noted that researchers in the field of creativity A. M. Matyushkin, N. S. Laytis, W. N. Druzhinin and A. I. Savenkov highlight the accumulation of creative experience of younger students as a sensitive period for potential development of creativity [8].

We also believe that early school age is a sensitive time for developing creativity and Chess lessons promote the development of creativity.

We would like to emphasize that creativity is the person's ability to generate unusual ideas, find original solutions and to deviate from the traditional schemes of thinking [10, p.173].

B. S. Gershunsky and A. N. Kostev consider chess as a kind of training tool for creative work and mark another important feature of it: unlike in many types of real human creative

practice, in Chess there is a higher concentration of the problem solution, since almost every move requires creative problem solving skill [5].

W. Davidov said that chess should be used as the best model for the development of reflection. Action planning is the ability of reflection. Some students can plan their activities for two, three steps ahead and others 10 steps [7].

There is no doubt that using chess in education has a role in the development of the young students' psychology, but only if there are such teachers who can help students to see the beauty and wisdom of Chess. In this regard, the training of teachers of chess, especially the psychological preparation, becomes very relevant. In the educational institutions teachers play very specific role, because they give students the opportunity to think independently, creatively and to see the deep connection of chess with real life.

Only in this case we can consider that the subject is productive at schools and at the same time scientifically prove the impact of chess on psychology of the young school children. Today, not only in Armenia, but in many countries Chess is being introduced as a school subject, as well research is conducted to find out the impact of Chess. It should be noted that there are not many studies on this topic.

In Armenia, with the introduction of chess in schools, psychologists began to study the impact of the subject on the younger school children's psychology. The aim of our study was to determine the effect of teaching chess on the development of psychology. It should be noted that the results of our research are being discussed with Chess teachers, and based on that, new methods are being developed to improve the effectiveness of teaching chess. In addition, we have prepared a manual for teaching chess which presents the organization of learning presses, the psychological characteristics and problems of young students.

Researches with five steps were conducted in 2012, 2013 and 2014. The table 1. shows the stages of the study, methods and techniques.

Table 1.

The stages, methods and techniques of research

The stages research	Object of research	Methods and techniques	Classes	Number
The first stage April-May 2012	Creativity	Observation, survey, interview, F. Williams's technique	II	369
			III	276
				645
The second stage October-November	Intellect	Observation, survey, interview, Verbal scale of D. Wechsler's intelligence test	II	90
			III	84
			IV	85

2012				259
Third stage April-May 2013	Intellect, watchfulness operative visual memory, stability of attention	Observation, survey, interview, Raven's Progressive Matrices, test of watchfulness , technique "Evaluation of operational visual memory,, Schulte Tables	II	84
			III	90
			IV	111
				285
The fourth stage September- October 2013	Intellect, Creativity, memory, attention, watchfulness, emotional sphere, willed qualities, motivation	Observation, survey, interview, Raven's Progressive Matrices, F. Williams's technique, test of watchfulness , technique "Evaluation of operational visual memory,, Schulte Tables, The cabins,, Evaluation willed qualities, Technique relation to school subjects G.N. Kazanceva	II	44
			III	64
			IV	51
			V	65
				224
The fifth stage February- March 2014	Intellect, Creativity, Memory, attention, watchfulness, emotional sphere, Similarities arithmetic, digit span	Observation, survey, interview, Raven's Progressive Matrices, F. Williams's technique, test of watchfulness , technique "Evaluation of operational visual memory,, Schulte Tables, The cabins,, Verbal scale of D. Wechsler's intelligence test	II	49
			III	62
			IV	50
			V	63
				224

At the first stage of the study, we found that second graders are above average in fluency, flexibility, originality, elaboration and creativity[13].

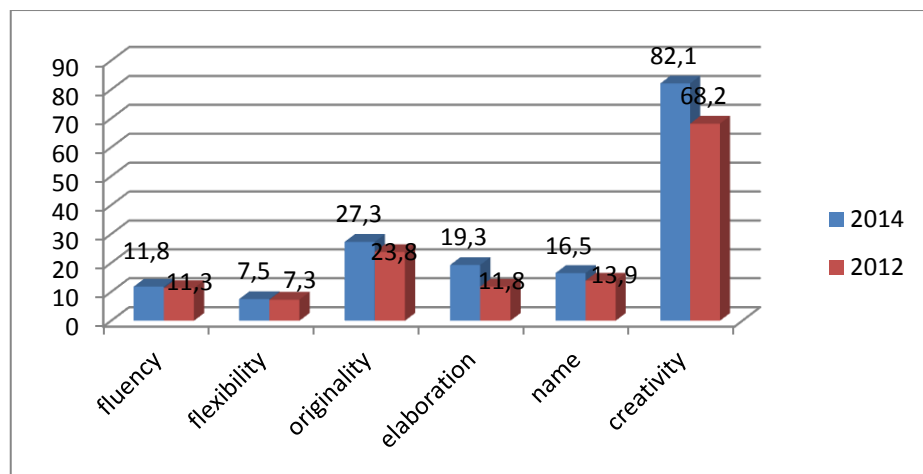
In the second stage by studying intelligence of second-graders, third-and fourth-graders, we found that third-graders have higher indicator of similarities. It shows the development of the logical thinking. Thus, Chess actively shapes the ability of logical thinking. In the third stage we found that third –graders have higher indicators of watchfulness than fourth-graders. Watchfulness is one of the important components of human intelligence and it is the ability to notice the characteristic of hardly noticeable features of objects and phenomena [1].

Summarizing the results of the fourth stage of the study we found that the teaching of Chess promotes creativity, memory and willpower.

The emotional sphere of young school children becomes more stable and harmonious. It was found that fourth-graders, who have been studying chess for two years, the indicators of creativity, memory and willpower are higher than fifth graders'. Furthermore, comparison of the results of two groups showed that the students who are good at Chess have higher intelligence, creativity and watchfulness .

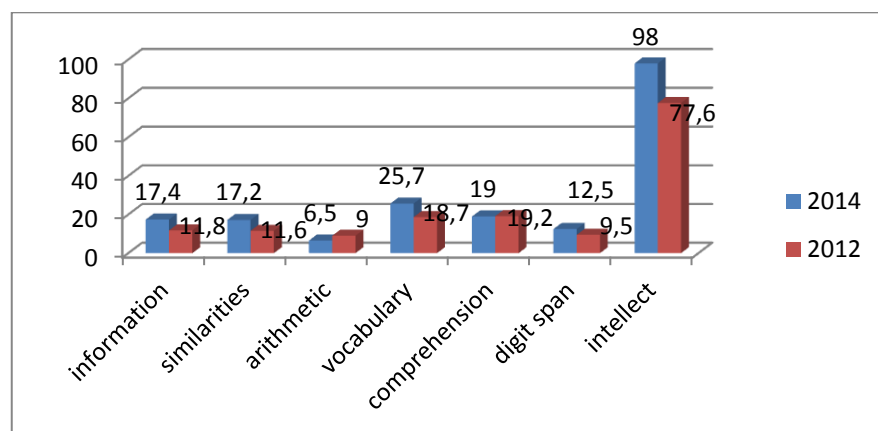
Also the study revealed that the teaching of chess not only promotes the development of cognitive sphere but also emotional and volitional. We think it is very important that the results of the study one more time have proved and persuaded (referring to our previous study) that the teaching of chess promotes the development of creativity. The evidence for this is not only that the fourth graders have higher scores in creativity but that good chess students excel in creativity.

All of this is proved one more time in the fifth stage. As already mentioned, in the fifth stage study had two phases. In the first phase the third-graders were studied for their creativity and compared with the results of those third graders who were studied in 2012. The same method was used for the study, method of F. Williams[1; 16].



Picture 1. Indicators of creativity

The third graders who studied chess excel on all counts, but the differences are more significant in originality and elaboration. In this phase, the fourth-graders intelligence was studied and compared with the results of the fourth-graders who have not chess lessons. The same methods was used for the study (verbal scale intelligence test D. Wechsler) [1].



Picture 2. Indicators of intellect

Analysis of the results showed that the fourth graders have an advantage in information, similarities, vocabulary, digit span and total IQ.

So this phase of research has proven that teaching chess contributes to the development of creativity and intelligence.

To reach goal of our research, in the second phase we studied intellect, creativity, watchfulness, operative visual memory, stability of attention, emotional sphere, as well as the similarities that are detected by logical thinking, arithmetic and digit span.

Table 2.

The results of the second direction

Classes	II	III	IV	V
M				
Intellect	25,7	28,9	30,8	30,9
watchfulness	12,0	16,4	20,1	19,0
creativity	74,1	79,9	82	74,7
stability of attention	0,59	0,78	0,91	1,05
operative visual memory	4,8	5,2	5,9	5,5
similarities	11,2	14,4	18	17,1
arithmetic	3,7	5,0	5,9	7,1
digit span	8,7	10,2	11,5	13,4

The comparison of the results showed that the fourth and fifth-graders have equal intelligence. Fourth graders have higher creativity and they have higher operative visual memory, watchfulness and similarities. The study of the emotional sphere has shown that emotional harmony and stability is more characteristic of fourth-graders, and minority has instability. It should be noted that emotional stability manifests in 10% of fifth graders.

The correlation analysis of fourth-graders ($n = 50$) shows a link between intelligence and operational visual memory ($r = 0,42$, $p < 0,01$), intelligence and observation ($r = 0,60$, $p < 0,001$), intelligence and creativity ($r = 0,48$, $p < 0,001$), intelligence and arithmetic ($r = 0,43$, $p < 0,01$), the intelligence and the digit span ($r = 0,42$, $p < 0,01$), intelligence and attention span ($r = 0,61$, $p < 0,001$). This indicates that the increase of intellect in the fourth grade contributes to the development of watchfulness, creativity, memory and sustained attention. A correlation was found between observation and operational visual memory ($r = 0,58$, $p < 0,001$), as well as between operational visual memory and sustained attention ($r = 0,48$, $p < 0,001$).

A significant correlation was found between creativity and similarity ($r = 0,49$, $p < 0,001$), which suggests that the higher the level of creativity, the greater the capacity for logical generalization.

Summarizing the results of the study, we saw that students who study chess differ from the students who do not study chess and they are included in a separate group. Based on this, we divided students who are good at chess. During the study the survey and interview methods were used with chess teachers to find out who they see as a strong Chess student. Conditionally we

divided students into two groups: group A and group B. Such a comparison we have performed in the previous stages of the study, so it is advisable to present all the results to see the dynamic development of psychological qualities.

Table 3.

The comparative analysis of indicators of groups A and B

	A		B	
	2014	2013	2014	2013
M				
Intellect	33,4	31	28,1	26,5
watchfulness	23	17	17,3	14,4
creativity	90,1	83	73,7	72,3
stability of attention	1,04	-	0,76	-
operative visual memory	6,4	6,6	5,3	5,3
similarities	19,9	-	15,9	-
arithmetic	6,8	-	4,9	-
digit span	12,7	-	10,2	-

Comparison of the results of two groups showed significant differences in terms of intelligence, creativity, watchfulness, attention stability and similarity (the differences are significant at the 0.01 level, the significance of differences was analyzed with t- test for independent variables). It is necessary to emphasize that the indicator of sustainability of attention in group A equals to the index of fifth graders.

The comparison of groups A and B allows to see the connection between chess and mathematics, as a comparison between the classes is impractical, given the fact, that the solution of mathematical problems is associated with understanding of the educational material. And it is clear that the students who are good at chess have good arithmetic skills. The comparison of the results of two stages shows the development of all the indicators in the group A and B, but in group A development can be observed in case of watchfulness and creativity.

Based on our research we can conclude

1. Comparison between Chess learners and non chess learners shows that students who study chess differ with higher rates of creativity and intelligence.

2 Comparison between classes shows that fourth graders excel in creativity, observation, operational visual memory and logical thinking.

3. Good Chess students surpass in intelligence, creativity, observation, sustained attention, arithmetic and digit span.

Fourth-graders are more emotional stable and have developed volitional qualities.

So, our research had two phases to reveal the role of teaching chess in the development of young school children's psychology. Our experience has allowed to make and agree with D.V Elkonin and V.V. Davydov's opinion that for today's children, based on the connection with the conditions of their development, it is possible to form their deep mental abilities [4].

Summing up the results of all steps we can say that teaching of chess in schools affects the development of mental qualities such as intelligence, creativity, memory, attention, watchfulness, logical thinking, emotional stability and will.

All of this, once again prove the importance and the role of Chess in schools as a tool of effective and strategic management of education and formation of the modern individual.

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