

DEVELOPMENT OF CREATIVE THINKING OF INDIVIDUALS DURING DIMENSIONAL FUNCTIONAL COGNITION ACTIVITIES

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Abstract

Looking at the conditions for the development of the person's creative thinking, we refer to the concept of the individual determination of man's psychological development by internal and external factors. According to this concept „all the external conditions influencing thinking determine the results of the thinking activity process but they do this refracted through its internal conditions” [Rubinstein, 1982]. The holistic analysis of the literature on psychology shows that many researchers view the conditions related to that in ways that are known to all. Analysing the scientific foundations of the problem of the development of the personality's creative thinking we are left with the assumption that each of these conditions encourages creative thinking and cooperates by enhancing the efficiency of the process. An important role in the person's creative thinking is played by unconscious processes, like intuition, which significantly complicates the diagnostic procedure. Some scientists suggest other diagnostic procedures of creative thinking in order to evaluate this phenomenon not only in test situations but also from the point of view of the person's actual activity. For example, G. Ozhiganova envisages a method of continuous diagnostics of creative work in children's natural conditions of life.

The approach which gives us good results is the combined use of the tests available in the literature on psychology, the methods and other methodologies of studying the person's development, including an analysis of the products of the subject's creative activity (drawings, craftwork, applications, creation of tales, verses, riddles, etc.) The active comparison of the results obtained through the methods of measuring the person's psychological qualities shows the creative thinking manifested in the conditions of real life.

A given function contributes to the creation of a person's positive emotional relationship in the process of creative thinking. Stage three of the study is dominated by the initial level of the cognitive-behavioural functions of the subject's creative thinking in the course of cognitive activity. In the process of gaining knowledge about the world, appropriate creative forms of behaviour are created, which are based on the persons provenly significant for the child: the teacher, parents and friends. On the whole, a given function contributes to finding a diversity of creative forms of individual behaviour.

Keywords: creative thinking; individual creative behaviour; functional spatial cognitive activity

1 INTRODUCTION

In order to identify the characteristics of the effects of the various factors on the process of creative thinking of people we organized an experimental work, which includes three stages. Each stage of this work consists of a series of sub-stages.

The first stage (steps 1-3) is committed to the implementation of the functional space of the cognitive activity of the first factor - *the timely update in accordance with the age, of the sense to expression of the personal qualities of creative thinking* - three conditions are created for it.

During the second phase (steps 4-6) there was effect from the functional space of the cognitive activity of the second factor - *development of the personal qualities of creative thinking during a specially organized cognitive activity* – it is fulfilled through the creation of certain conditions.

The third stage of the experimental work (steps 7-9) the introduction of a functional area of cognitive activities on the third factor - *psychological support for the creative thinking of a person in a sensitive period* – providing a system of conditions.

During experimental work, we find that the development of the creative thinking of a person during the cognitive activity at each stage and sub-stage has specific integrated features.

2 EFFECTS OF THE FACTORS ON THE DEVELOPMENT OF THE CREATIVE THINKING OF A PERSON

After studying the methods of using special techniques, taking into account the humanistic principles of our study, we focused on the development of the creative thinking of each object in our study. To the control groups for identification of the actions are applied only certain psychological conditions.

To determine the effect from each of the above factors and the conditions for their implementation will be used diagnostic programs compiled with the essential requirements of the psychodiagnosis according to which the program must comply with the essence of the process which is being studied, the phenomena that build their systematic structural analysis.

In the basis of the used diagnosis programs is the analyzed, isolated and characterized as creative thinking of a person, such as: speed, flexibility, originality, accuracy. Three levels of expression of the creative thinking processes (high, medium, low) are identified. The high level is characterized by that, that the quality is always expressed, or at least in the majority of the cases; the average – the qualities occur sometimes; low – the qualities are rare or do not occur at all. The determination of the manifestations of the personal qualities of the creative thinking for us is not an end but a means, which makes it possible to trace the dynamics of the phenomenon in the study and the effectiveness of our work and to identify the quality connections and relationships.

During the study of the cognitive personality factor of each person the creative thought process is carried out through a set of specified conditions. In order to achieve a common understanding of the term 'conditions' let's check out its definition. This is a condition - "that's something that depends on something else (reasons), a major component of the complex objects" [Ilichev, M., Sovetska, 1983. p.707] condition - "the environment in which they reside, and without which there can be no objects, events" [Kondakov, 1976. p.628].

When we select the conditions for the development of the creative thinking of a person, we refer to the concept of individual defining of the human mental development about internal and external factors [Leontiev, K.K. Platonov, S.Rubinshtayn, 1982.].

According to this concept, "all the external conditions, the data on the effect of thinking, determine the results of the thinking process, but refracted through its internal conditions" [9,p.68]. Defining this plot as methodological, we have identified different underlying diseases. The holistic analysis of the psychological literature has shown that many researchers believe that the conditions are related.

An analysis of the scientific basis of the problem about the development of the creative thinking of a person, leaves us to assume that each of these conditions help the development of the creative thinking and through their interaction, they increase the efficiency of the process.

3 TIMELY UPDATE OF THE AGE SENSITIVITY OF THE INDIVIDUAL TO THE EXHIBIT OF QUALITIES OF CREATIVE THINKING

Focusing on the content of the terms "*age sensitivity*" - " periods of optimal combination of conditions for development of certain mental properties and processes, which periods are specific for certain age " [Golovin, 1997. p.592]; and the term "update" - "transfer from potential state in real actual one" [Golovin, 1997. p.16], under *update of the age sensitivity of the individual*, in order to show the qualities of the creative thinking, we understand, the combination of conditions that contribute to the transition of the specified process (the qualities of creative thinking manifest) of the potential field of action in the current.

The age sensitivity, as suggested by N.S. Leites, is essential for the brain development [Bogoyavlenskoy, 1997. p.59]. This is a special responsiveness to the environment and manifests itself in different ways: in the selectivity of the attention, in the originality of the imagination and the originality of the senses. At such times, the child is particularly susceptible to multiple impacts, sensitive to the different aspects of reality. Favorable conditions for the acquisition and formation of certain mental qualities arise.

We'll emphasize that the timely update of the age sensitivity of the individual to the manifestation of creative thinking is a very important factor.

If creative thinking isn't developed specifically and purposefully in the pre-school period and in the elementary school period, then the lost time in which should've been created an adaptive and flexible model mans lack of subjective value for creativity, which is equal to zero [Rostov, 1990].

The premises for the process of development of creativity of the individual are the diagnostic programs supporting all stages of the experimental work. At present are widely used different psycho-diagnostic tools. The methods for measuring of the creativity of J. Guilford, EP Torns, S. Mednick [Tunik, 1988] are adapted and widespread. But the testing approach as a whole, including on this issue, is a subject to much criticism by the researchers. The question arises whether it is humane? It is established that the test procedure does not give a complete picture of the level of development of the creative thinking of the subject. So, D. McClelland noted that "the movement of the testing methods brings serious danger from perpetuating the mythological system of selection of assessment methods in which the measured success is never based on the validity of the measurements beyond a certain vicious circle" [McClelland, 1973. p.14].

You have to believe that the creative thinking personality plays a big role in all unconscious processes, such as intuition, which significantly complicates the diagnostic procedure. In connection with the above, some scientists suggest other diagnostic procedures for the creative thinking (creativity) of the subjects, to assess this phenomenon not only in test situations, but also in terms of real action. For example, G.Ozhiganova [Zhiganova, 2001] envisages a method for diagnosing the prolonged work of children in natural living conditions.

During the organization of the diagnostic support of the process of development of creative thinking of the subject, our approach lies in the combined use of the available literature on the psychological tests, and other research methods, including analysis of the products of the creative activity of subjects, such as drawings, applying crafts, applications, compiling fairy tales and rhymes, riddles and much more. In addition were conducted meetings with protocols where the manifested creativity, the creative behavior and emotional responses of each subject and the teacher are recorded in a diary. The results obtained by the psycho-diagnostic methodological measurements and the displayed qualities of creative thinking of the subject, and the demonstration of that phenomenon in real-life conditions, are constantly compared.

In the first phase of the experimental work was not created a control group, because in our opinion, the one-time intervention in the process of personal development of the subject in this group (including their creative thinking) would be inhumane and the manipulation of such variables as emotionally positive attitude of the child to the creative process, eliminates the process of interaction and behavioral barriers and may have negative consequences.

In the initial stage of organization of the experimental work, we conducted a preliminary (before the experimental influence) measuring of the level of expression of creative thinking of the individuals. The initial diagnosis is aimed at determining the level of each subject in the displayed qualities of creative thinking - speed, flexibility, originality, accuracy. To diagnose the level of non-verbal creative thinking of the individual is used a graphical test with figures which reports on the creativity, proposed by E.P. Torrance (TTST) [Kondakov, 1976] and "Circles" test [Peysahov 1977]. Test tasks include circles, squares and triangles; the persons act in accordance with the instructions from the annex. The test subjects are proposed to draw as much as possible objects using these figures. The verbal test includes tasks such as "Ask and guess" and "Improve the toys" [Kondakov, 1976]. In addition to the test is easily applied the method of the "unfinished story". [Diagnosis... , 1994, p.32].

The analysis of the results shows that the verbal responses of the subjects rarely show the quality of creative thinking and the pictures symbolize objects that are common and frequently encountered in the everyday life and the environment. Mainly the subjects rely on their memory, trying to remember the objects that correspond to these elements. For example, Mariyana T. draws glasses, eye, human face, scissors, letter "F" (in Cyrillic), O, C ' based on a circle; based on the square - house, carpet, window, robot's head, mobile phone; based on triangles - palm leaf, scarf, road sign. Konstantin I., in the first group depicted - flower car wheel, ball, eyes, watch, button; in the second - table, pencil, TV, laptop, window, door, button; in the third level - a shovel, table, pencil box, button. These examples show that during the drawing of individual items one subject can be found in all three groups (for example: a button) or in two groups (table), but these images are rare and represent 1% of the overall picture. Original drawings (unusual ideas) are rare, for example, the universe, the Earth and other planets, the Egyptian pyramids; objects outside their everyday lives, fantasies and non-existing ones are practically not displayed. The results are shown in Table 1.

The analysis of the data presented in Table 1 indicates that most of the test subjects do not show or rarely show creative thinking, even on a low level. The subjects that show or exhibit the qualities of creative thinking at a higher level are few and they are at a medium or high level. The most frequently occurring quality of creative thinking is the originality.

Table 1. Distribution of persons' results from the experimental group (n = 953) according to the level of manifestation of the qualities of creative thinking in the early stages of the experimental work (establishing experiment).

Levels of manifestation		Qualities of the creative thinking			
		SPEED	FLEXIBILITY	ORIGINALITY	ACCURACY
Low level	%	73,5%	87,8%	90,2%	68,6%
	points	705	827	850	635
Medium level	%	20,3%	10,5%	7,3%	26,9%
	points	203	91	84	285
High level	%	6,2%	1,7%	2,5%	4,5%
	points	45	35	19	33

The first stage of the experimental work is focused on the application of the functional space in cognitive activities which are actual for the current age sensitivity of the individuals manifesting the qualities of creative thinking. This phase takes place in preschool and school age and suggests the creation of the following conditions:

1. The gradual introduction of a child to the specific knowledge about the surrounding reality through the sensor system of the individual;
2. Providing positive emotional attitude of the individual for the process of development process of creative thinking;
3. Gradual removal of the child's behavioral barriers during the interaction.

Let's look at the details of the description and the analysis of the first stage of the experimental work.

During the organization of the staged activities of the child with special knowledge about the surrounding reality on the basis of his/hers sensory system, for the first sub-stage we took into account the popular position K.D. Ushinsky about the influence of all human senses for the better absorption of the material.

Important to us is also the opinion of L.C. Zankova (2001), according to which it is necessary to consider not only the influence of the visual and audio perception of the subject, but also the results from the kinesthetic apparatus. During the development of the content in traditional education little attention is paid to the development of the emotional sphere of the child, while many scientific studies have shown that human cognitive abilities are mainly associated with senses and feelings. Exactly the emotional sphere allows a person to feel complete in the world; the multilateral and multidimensional out-of-the-box thinking helps the visual thinking to create an image of the world.

Furthermore, bear in mind the fact that the children's play is a natural form of free expression of their activities where they explore the surrounding reality. The activity that is a game to them reveals a wide field for the expression of 'I', personal creativity, initiative, self-knowledge, problems solving in interpersonal relationships, social experience acquiring. For the realization of such games in the classroom we use a wide range of creative games and game elements. Their most important function is the creative self-realization, the diagnosis and the psychological development and psychological correcting functions (L.S. Vigotskiy, D.B. Elikonin, S.L. Rubinshtan, AN Leontyev, etc.) as well as the communicative function [S.L. Rubinshtein, 1982. etc.].

Based on these assumptions, we have created a system of work, including in itself a sequence of steps. We underline that this system for creation of knowledge can be implemented in elementary school classes or in family clubs in some groups in kindergarten, in the additional educational centres, but also older preschool children can engage the smallest in interesting activities, students and scholars from different schools can play creative games with the kindergarten kids.

The purpose and the objectives of the preparatory stage, which consists of three games, appear as immersive. Or otherwise, we can call the children "divers" (submerged, diving), along with their parents, and teachers and educators, who work directly with the subjects to create a certain atmosphere, cooperation between the interested adults and the children, creative space without the limits of one room.

At the first meeting with the kids there is a strong emphasis on the lecture about creativity, the creative

personality, the creative thinking and its manifestations. Also the first diagnosis, described above, is conducted.

The second meeting with the children should be under the form of family club meeting and includes stories of children and the parents accompanying them or their grandparents, the teachers or educators, as well as creative people, innovators and people of creative professions. The meeting is followed by an exhibition of children's crafts works and family collections under the slogan "Our hobby. The meeting ended with a party at which was organized a reflexive activity for the children and adults, in response to the following questions: What is creativity? What is a creative activity? Why is it important to be a creative personality? What qualities accompany the creative personality? This meeting often is followed by trips to companies, where work the parents of children, so that they can learn about the different types of creative activities such as art workshops, puppet theaters, the physics lab at the University department, a confectionery, greenhouses for growing plants etc. The tour expands the knowledge of the children about the surrounding world, enriches them and develops their sensory perception; it gives vivid material for subsequent analysis on the characteristics of the sensory system of the individual.

The third meeting from the preparatory stage involves game components, with entertaining theatrical moments (staging tales, fables), characteristics of the human cognitive activity from the environment: how and why we know it, with the help of which organic system, which senses are triggered at this moment.

The second stage of our work is the main one – it follows the following line: familiarizing the subjects with the characteristics of the knowledge about the surrounding reality; exploring the sensory systems of the individual; activation of the sensory systems of each child. We can give some examples for these situations.

The title of the meeting is "The world of our senses!", the purpose - to show the importance of the various types of human senses. The meeting begins with an old Indian tale.

- Three blind men do not know what an elephant is, but they're leading one. The first one studied the legs of the animal, the second – its trunk, and the third – the tail. Then they gathered and shared their thoughts. "Elephant – this is a dresser" – said the first one. "No, elephant – this is a thick rope" – said the third. "Elephant – it's a thin rope." – said the third. And they led a long discussion.

The question is: Why vary their opinions and why their conclusions are false? The discussion allows us to make a conclusion, and also helps us to know the world around better.

A series of experiments is conducted:

- A. Close your eyes and determined the actions of the teacher by hearing;
- B. Before you stands a mysterious black bag in which are hidden unknown objects, your task is to determine what are they, only with the help of your hands;
- C. Determine something just by the smell of it;
- D. Determine something just by the taste of it;
- E. See pictures, for example from the Art Gallery - describe your visual experience.

Then discuss all the issues on which is needed a sense for the opinion of the researcher and everything can be stored in an album.

The types of sensations of other participants in the experiment are determined through the following tasks:

1. Bananas are put among burning candles. The first monkey tries to take a banana, but several times it burns itself. After a series of trials and errors, it begins to extinguish the fire of candles with different objects at hand.
2. Spare observations were conducted with ostrich chicks. One made a hole in the shell and the other got out of the shell and stood on its feet. When a noise was heard in the vicinity the first ostrich froze in the shell, and the second laid down on the ground and did not move.

Summary of results: what did we learn today, what is important, interesting, were there any difficulties of any kind, what were they.

Theme of the meeting - "Learning to perceive the world", goal - to give the concept of perception, to determine the individual perception of the individuals. At the beginning of the meeting is held a discussion on the following issues: what is perception, with the help of which organs do we perceive the world, the types of

perception.

In the practical part of the meeting we perform several experiments.

Perception of time: A teachers with a stopwatch clocks the time intervals, in the beginning and in the end of each interval he hits a rubber mallet at the table. The participants set a value for the time span.

Perception of space: A child with closed eyes is sitting on a chair, facing the class. The teacher mixes coins different sized moves from one place to another and releases one of the coins. The child determines in which part of the room and from which coin is the sound.

Perception of movement: Watch a video fragment of a moving car, train or plane.

Defining the scope of perception: on a tray covered with a cloth are placed 12-15 objects. They are on display for some time, then the test subject says how many items were there and what he/she remembers of them.

Perception of colors: each child receives 3-4 sheets of colored paper (e.g., white, red, blue, yellow). It has a few minutes to look closely at the leaves, and then tells of the feelings, perceptions, emotions which have risen in him/her, they can even paint a picture.

A discussion is held after each experiment. After this summarizing of the meeting is done.

The third stage of work – combined stage - it suggests continuation and extension of the work on the development of the sensory perception of the child, which aims to increase the work of his/her sensor systems. This is done mainly in the form of inclusion in classes with other psychological materials, such as the development of certain qualities of his/her creative thinking. A importance here have the travels, tours sightseeing, i.e. placing the subject in an unusual environment, in which the test subject finds new audio, visual, gustatory, tactile and olfactory sensations (zoo, river, forest, sea etc.) of perceptual images.

The reproduced emotional images of perception lead to new ones due to the specific mental formations – mental pictures. The mental pictures generalize well; they are close to the steps leading to one unite image and perception of ideas to summarize the notions, operate with the thoughts.

We can make several interim conclusions.

Knowledge is divided into sensory knowledge (this is what we perceive through the senses) and logical knowledge (thinking). Feelings, perceptions, ideas, imagination relate to the sensory forms of knowledge. The accumulation and processing of the information begins with the sensations and perceptions, the physiological basis of which represents the action of the feelings. The more developed the senses, the more fully they reflect the world of the first signal system, the more information the child gets, the more successful is his/her mental development.

In order for such images to be meaningful thoughts they must be fully felt and perceived. This follows from the fact that the sensory perception is closely connected with the logical knowledge (thinking), to such an extent that the perceptual knowledge will be more efficient, and thus the productive thinking, too.

The sensory organs must be developed and perfected through various games and exercises. The main objectives of these classes are: studying the peculiarities of the representative systems, development of sensory and perceptual skills, improvement of the activity of the sensory organs, opening the channels of the feelings, training the attention to the signals of the surrounding world, etc.

The sensory development of children in pre-school age has the following characteristics: There are some basic sensory standards, development of representative systems, awareness rising, they have developed targeting, planning and manageability of the perceptions. There is a connection between the establishment of the interconnection of speech and thinking and the intellectualization of the perception of the child as a whole.

In elementary school, the sensory standards developed in the child in his/her pre-school age, increase in depth through presentations of abstract nature that form on the base of the first abstract concepts as a set of basic features of the objects from the surrounding reality. The sensory development of the children continues in the direction of the abstract perception of real objects and their summarized properties in sensible notions and in logical way.

Thus, the gradual introduction of a child with the world around them on the basis of the individual sensory systems contributes to the development of the mental processes such as sensation and perception of the

reality through the five senses. It is formed and developed on the basis of the individual sensory standards of the child in the form of visual information, such as figurative representations, affecting the development of the thinking processes of the individual. The final sensory stage of cognition can be, in this case, a visual-imagery and visual-effective type of thinking.

We found that in the first sub-stage of the experimental work dominates the first level of expression of the cognitive development of the creativity of the individual in the process of cognitive activities, which are characterized by that that the subject is trying to stimulate the creative cognitive elements from the environment based on the activities of the analysts. In general the designated function contributes to the process of knowing the surrounding reality, which has acquired a pronounced creative nature.

To evaluate the success of the experimental work in the end of the last sub-stage is performed a diagnostic cutting on. In order to diagnose the non-verbal level of creative thinking are applied the topics from "Form A" - a test for creative thinking by E. Torns (TTST) [Kondakov, 1976, p.8-9]. Speaking exercises which include tasks like "Fancy issues," "Incredible situations," "Ask and offer", "Improvement of Toys" [Kondakov, 1976].

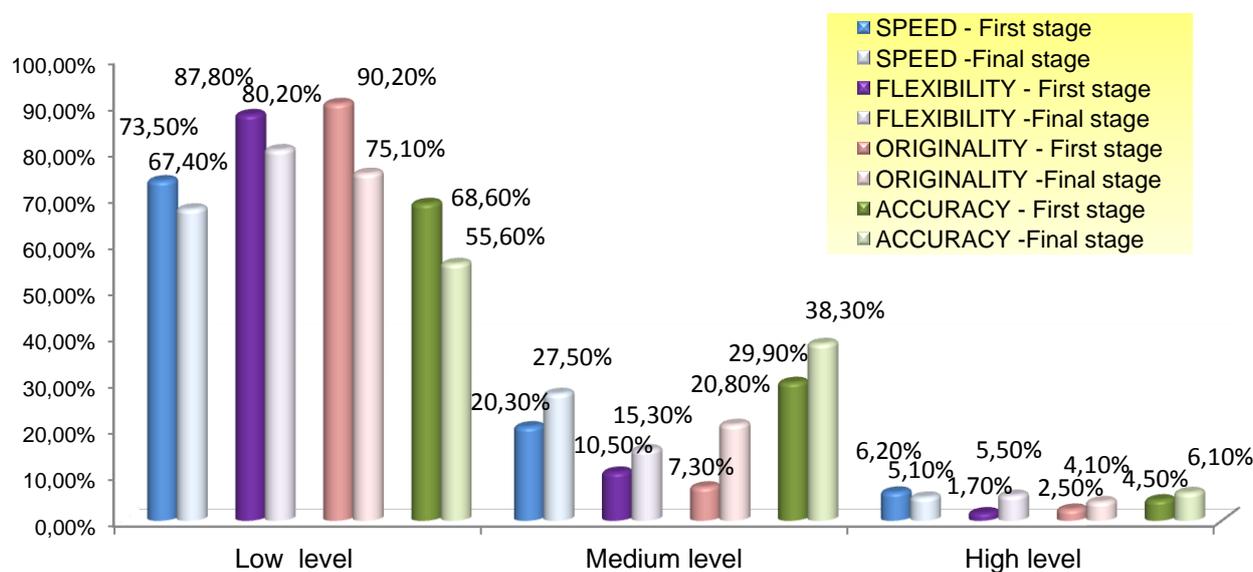
Table 2 shows data about the distribution of the subjects from the experimental group according to their levels of manifestation of the "qualities of creativity" at the end of the final sub-stage of the work.

The analysis of the data from table 2. shows that the result from the final sub-stage of the experimental work is an increase in the number of persons in the group with high and medium levels of expression of creativity and, accordingly, reduce the number of persons in the lowest level. Higher dynamics is observed in the development of the quality of "originality": in the group of people who show an average level of this quality there was an increase of 7.3%, and in the final stage is observed increase of 20.8%.

Table 2. Distribution of the subjects in the experimental group (n = approximately 960) according to the the levels of expression of "creative thinking skills" at the end of the sub-stage of the work.

Levels of manifestation	Qualities of the creative thinking				
		SPEED	FLEXIBILITY	ORIGINALITY	ACCURACY
Low level	%	67,4%	80,2%	75,1%	55,6%
	points	623	755	735	549
Medium level	%	27,5%	15,3%	20,8%	38,3%
	points	272	155	189	355
High level	%	5,1%	5,5%	4,1%	6,1%
	points	58	43	29	49

Fig.1. A comparison between the distribution of the subjects in the experimental and the control group according to the levels of manifestation of the "creative thinking skills"



Generally, for the emotional contact of the children with the teacher, are available samples of creative behavior that fosters a positive emotional connection with the child, and also contributes to the development of his/her creative thinking.

R.Stamatova, who was actively involved in the experimental work as an elementary school teacher and also developed an adaptive educational strategy for bilingual children [Stamatova, 2014, p.126-139]

Significant changes have occurred during this time and they enhance the creative manifestation of children, a special approach to the preparation and conduction of such meetings, the information processing, finding of creative tasks and situations is used. The meetings help the children and the teachers to adapt to the humanistic principles of teaching.

"The basic principle of the behavioral theories is that if a behavior persists over time, then there is some assistance that supports it. To reduce bad behavior, we must understand what is this assistance. In this case, the assistance to the poor behavior of students is the attitude of teachers, parents and other adults". [Stamatova, 2014, p.126-139]

4 CONCLUSION

The psychological factor for the development of the creativity of children in functional area of cognition, which is addressed in this paper, received confirmation on its importance and usefulness.

In order to identify the characteristics of the effects from the particular factor on the personality was organized the development of the creative thinking of the subjects through experimental work. The first stage is designed to implement the cognitive factor in the functional space - the timely update in accordance with the sensitivity age of the individual, which shows the qualities of creativity, consists in the creation of three conditions:

- ✓ A phase which includes a child with knowledge of the world (based on the sensory systems of the person);
- ✓ Creating emotional and positive attitude to the process of individual development of the creative thinking;
- ✓ Gradual removal of the behavioral barriers of the child during the process of interaction.

In the first stage of the experimental work is registered an event of creating a level of cognitive functional aspects of the cognitive function.

A study on the second factor of cognitive development lays ahead - the development of the qualities of the creative personality during specially organized cognitive functions by creating certain conditions: choosing a specific content for the special training classes; creating a variety of individual activities; humanistic interaction of all the participants in the educational process.

REFERENCES

- Alexandrov, YU.I. Basics of Psychophysiology: Student's book, M., INFRA-M, 1998, p.432
- Bogoyavlenskoy, D.B. Prof. Basic modern concepts of creativity and talent, M., ed. "Mlada gvardiya", 1997, p.416.
- Diagnosis and development of the creative thinking in upper school, Krasnoyars, KGPU, 1994, p.32.
- Golovin, S.U. Dictionary of practical psychology, Minsk, Harvest, 1997 – p.800
- Kondakov N.I., Logical Dictionary – Reference book., M., ed. "Science", 1976, p.720.
- Ilicev, Ed. L.F. Philosophy encyclopedic dictionary, M., Sovetska Encyclopedia., 1983r., c 839.
- McClelland D.C. Testing for competence rather for than intelligence., Publishing house „American Psychologist”, 1973, V. 28. P., p.1-14.
- Short test about the creative thinking, in pictures: Guide book for psychology students, M, INTOR, 1995, p.48..
- Peysahov, N.M. Psychological and psycho-physiological characteristics of the students, Publishing House "Kazanski Universitet," 1977, S., p.102-120.
- Rostov A.S. Psychological bases of reproductive and productive relationship of the cognitive activities,

Novosibirsk, 1990., p.98.

Rubinstein S.L., Problems of the abilities and issues in the theory of psychology, Psychology of the individual differences, YU.B. Gippenreyter, V.YA. Romanova, M. MGU, 1982, S., p.59-68

Stamatova, R., (2014). Transforming the learning outcomes in children through adaptive educational strategy, Novi vzglyad, International Scientific Bulletin, Edition 3., Novosibirsk, ISBN 978-5-00068-071-1, p.126-139.

Tunik E.E., Diagnostics of creativity, Test, E. Torrensa, Imaton, 1988

Zhiganova G.V., Diagnosis and formation of creativity in children during educational activities., "Psychological Journal," 2001, T 22, № 2 - S., p.75-85.