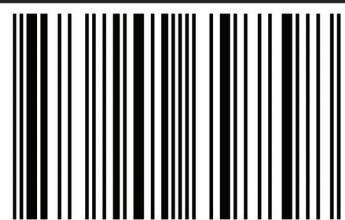# Introduction to experimental psychology of human self-development

The textbook "Introduction to the Experimental Psychology of Human SelfDevelopment" is an addition to the main textbooks for the fundamental courses "Developmental Psychology", "Age Psychology" and "Pedagogical Psychology".

The textbook presents up-to-date data in the field of psychology of self-development, developmental psychology, age psychology and pedagogical psychology, which will enable students to broaden their horizons and master the disciplines under study at the modern scientific level.

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Ageyev

Introduction to experimental psychology of human self-development

Training Manual

Valentin Ageyev

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INTRODUCTION

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DEVELOPMENTAL PSYCHOLOGY

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Bright memory

our dear Baby.

is dedicated to .

Introduction to experimental psychology of human self-development

(experience in methodological, theoretical and empirical research)

CONTENTS

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List of basic terms used in the work

1. **"Vertical" development. A** change in the quality (type of intermediary) of a subject activity.

2. **"Outer."** Not made by man himself.

3. **"Inner."** Produced by man himself.

4. **"Horizontal" development.** Formation of activities within a certain quality (type of intermediary).

5. **It's a denotative value.** Converted form of a natural object (object).

6. **Landmark mediation.** The transformation of a mark (cultural object) into a means of individual activity.

7. **Meaning.** a) The transformed form of activity; b) the way the subject is included in my activity; c) the way the outside world (real or social) is included in my activity.

8. **Ideal form of activity. The** form of the expected result of the activity (purpose of the activity); the form of the expected process of activity (mode of activity).

9. **Ideal form of culture. A** form of social activity identified in cultural objects and given to a person as a form of their individual activity.

10. **Historical reflexion.** The ability to make the history of one's own development a subject of cognition.

11. **Cognitive reflexion.** The ability to make the subject of knowing oneself.

12. **Cognitive communication.** Forming a common ideal space by exchanging values in order to assign ideal forms as means of "horizontal" development.

13. **Connotative value.** Converted form of individual activity.

14. **Constructive activity.** Structural activity of the new structure of the substantive activity.

15. **Creative activity.** Activities carrying out substantive activities.

16. **Creative reflexion. The** ability to make your ideal form a subject of

production (creation).

17. **Creative communication.** Production of a common ideal space by generating new values as means of "vertical" development.

18. **Creative mediation.** Reconstruction of ideal forms of activity as a means of constructing real forms of activity.

19. **Creativity. The** ability to generate ideal forms of own activity.

20. **Logic.** An internal pattern.

21. **Inter-subsular activities.** Synthesized from individual, aggregate subject activity.

22. **Mediation.** With the use of means.

23. **Relationship.** Mutual representation of related realities in each other.

24. **Perceptual-mediated activity.** Activities mediated by its ideal form of perceptual type.

25. **Production.** Conversion of reality (subject and psychological) of the initial type of mediation into reality (subject and psychological) of the resulting type of mediation.

26. **Subject of activity.** Social form of a cultural object.

27. **Substantive activity. An** attitude of transformation of the real mile of ideal reality, based on a priori hypothetical knowledge of the future result of the transformation.

28. **Causal mediating.** Using a cause (natural or social) as a means.

29. **Rationally-mediated activities.** Activity mediated by its ideal form of rational type.

30. **The real form of activity. The** result and process of the activities carried out.

31. **Reflexion.** The ability to make oneself the subject of cognition (knowledge).

32. **Self-development.** Quality self-transformation through means designed by the developing person himself.

33. **Sensor-mediated activity.** Activities mediated by its ideal form of

sensory type.

34. **The point.** The way in which my activities are incorporated into the outside world (real or social).

35. **Joint activities.** Mutual impact of subjects of individual activities.

36. **Type of subject activity**. Substantive activity at the specific historical level (defined by the type of mediation as its nature).

Introduction

The manual "Introduction to Experimental Psychology of Human SelfDevelopment" is an addition to the basic textbooks for the fundamental courses "Developmental Psychology", "Age Psychology" and "Pedagogical Psychology".

The textbook presents modern data in the field of psychology of self-development, developmental psychology, age psychology and pedagogical psychology, which will allow students to expand their horizons and master the disciplines under study at the modern scientific level.

The problem of self-development as a specific scientific problem is new for psychological science. In psychology today only approaches to the decision of a problem of self-development are planned. Apparently, these approaches will demand change of type of research thinking of psychologists themselves and simultaneous change of psychological paradigms.

An independent problem is the problem of organizing self-development and its psychological diagnosis. At present, against the background of the global education crisis, the lack of psychological models and technologies of education of a new, nontransmitting (not appropriating) type is particularly acute.

It is hoped that the proposed textbook will enable students to look at existing psychological and pedagogical problems in a new way, from new perspectives. This will allow students to take a critical look at classical psychological paradigms, many of which will soon be one hundred years old or more.

1. PERSONAL DEVELOPMENT DETERMINACY AS A PSYCHOLOGICAL PROBLEM

1.1 Individual development as a psychological problem.

1.1.1 Historical dynamics of the content of the term "development".

For ancient science, the idea of development had no independent meaning. Development was considered in line with other changes. The idea of upbringing and education as processes in which the necessary changes are deliberately created was widely spread. In ancient medicine the first hypotheses about peculiarities of the development process appeared. The first explanations of such changes were associated with the change of ages. For the first time K.Galen put forward a provision on congenital and acquired forms of behavior. The first age periodization of development was proposed by Aristotle and was based on the criteria of sexual maturity. Unlike Plato, Aristotle proceeded from the processes of human biological change. According to Aristotle, life is the process of internal changes, which are made under the influence of external factors. Aristotle's thesis about the unity of form and content is the first ever explicit formulation of the idea of development. In Antiquity, development was understood as quantitative change. [1].

During the Middle Ages and the Renaissance, the idea of development was practically never developed. Some thinkers (for example, Thomas Aquinas) continued research of development, but their ideas were completely borrowed from the ancient Greeks (in particular, from Aristotle) [1].

In the 17th century, development research is gaining new impetus through the work of Ya.A. Comenius. In his pedagogical practice, he realized Aristotle's idea of life as internal development. Ya.A.Comenius was the first to formulate the principle of nature as a pedagogical principle of following the universal laws of nature development.

From a new perspective, the idea of development began to be developed in the works of F. Bacon. He gave up the idea of creation of the world by God and accepted the idea of formation of nature from a material source. The idea of material unity of the developing world was also shared by F.Bacon's contemporary, R.Descartes. R.Descartes supplemented it with the idea of development as the basic law of existence, on which all other laws of nature are based. At the same time, R.C. Descartes did not accept the idea of

development in relation to human psyche.

The study of development in the works of B. Spinoza comes to a new methodological level. In his teachings, the development acts as a process of deployment of a moving substance in its attributes and modules and its reverse convolution, but already on a new round of movement. For the first time in the history of science B.Spinoza had formulated a provision about self-movement of matter, about matter as "the reason of itself". At the turn of the 17th - 18th centuries the idea of development undergoes a significant change. One of the first to carry out the transition to a new understanding of the development of G.V.Leibniz [2]. He ascribed the ability to change, to transform, to transform not only the nature as a whole, but to any objects of nature ("monads") [1]. Based on preformist views, G.V.Leibnitz, nevertheless, introduced procedural characteristics of development: uniformity (self-identity) of the developing object and change. The contradiction between the first and the second is the mechanism of development initially given to the gradual emergence of the new [2].

In the 18th century, J.-J. Rousseau, using the principle of naturalness as a basis, proposed his concept of development. He used the leading beginning of each age and the relationship of ages as a criterion for determining the periods of development. According to J.-J. Rousseau, the internal mechanism of development is maturing. The great achievement of the 18th century was the idea of developing learning offered by I.G.Pestalozzi. In his opinion, education should not follow ("splash") nature, but should actively shape the personality of the child (education should lead to development).

In 18th century philosophy, the idea of development was developed from the point of view of the theory of knowledge. In many teachings of that time, the world was seen as a projection of human perceptions of the world into reality. Nevertheless, I.Kant in his theory of cognition realized the idea of dialectical synthesis as a mechanism of development, forward movement, progress. I.G.Fichte introduced into scientific use the idea of the "Self", which in relation to the "non-self" reveals its potential (developing). He proposed reflexion as a mechanism of self-knowledge (self-development). In the 18th century, A.Galler, a prominent Swiss physiologist, proposed to consider the organism as a "living machine" developing according to its own internal laws rather than under the influence of external factors. In the 18th century, thanks to the works of D. Diderot, P. L. M. Maupertyui, J. B. Robin began to form a new mechanism for causal determinacy of development. Mechanistic determinacy

of development begins to give way to more complex biological determinacy based on species traits.

By this time, two alternative approaches to the analysis of development had clearly emerged in science. The first one proceeded from the idea of innate psyche that matures "naturally" and does not depend on external conditions of the child's development. The second proceeded from the idea of the child as a "clean board" (tabula rasa), which is formed exclusively due to the leading role of external factors in the development of the child [1].

At the same time, I.G.Herder extended the idea of development to the whole nature and society. In his opinion, nature is in constant development, which is understood as a movement from its lower forms to the higher ones. From this point of view, the world is a single, continuously developing whole, naturally passing certain necessary stages. From simple matter the development is directed through the appearance of plants and animals to man endowed with intellect and mind. The pinnacle of this development is the "world soul". This scheme is not a ladder of creatures created by God, but a continuously improving "chain of development", the crown of which is not on earth, and in a supersensitive world. In this way, the concept of development becomes comprehensive. Everything develops: the universe, the earth, nature, man, culture. The distinctive feature of I.G.Herder's point of view is that human development "falls out" of the "natural course of history". It means that the human being should lay the foundation of his future phenomenon himself. As a human being; he has to create his own future.

I.V.Goethe believed that development in nature can be found only when it is discovered in man himself. A person who is not developing himself cannot understand the idea of development. Goethe introduced for the first time in the history of science the concept of metamorphosis (cardinal transformation) in the development of the organic world, as well as the ascent in development. Climbing means a transition, a leap in the system to a higher level of organization.

The most fundamental development of the category of development as a special principle, a universal way of being, was carried out in German classical philosophy, and especially - in the philosophical system of G.V.F.Hegel. As is known, he laid the foundations for dialectical (genetic) logic as the logic of formation, development and transformation of any organic integrity (totality) [2].

In general, up until the 18th century, it was common to understand development as the deployment of what was already there before development began. This understanding of development was incorporated into a wide variety of knowledge systems. Development (or evolution) at that time was understood literally - as growth, a simple increase in the size of already existing (so understood the development and I.Kant). As a result, science in the 16-18th centuries was based on the postulate that once emerged (by someone and somehow created) the world remains unchanged and the task of science is to discover and cognize the laws by which it is already arranged in its original meaning [2].

In 19th century I.F.Herbart suggested psychological theory of development stages based on the apperception mechanism. But I.F.Herbart's idea of development is in the background, and he puts education, which is carried out on the basis of mental mechanisms, actually not connected with development, in the first place.

Following I.G.Pestalozzi, A.Disterweg developed the idea of naturalness. In addition to the principle of uniqueness of nature, he put forward the principle of cultural expediency. This principle allowed abandoning the individualistic interpretation of man and making the connection of society, education and individual development the main subject of research. A.Disterweg, developing I.G.Pestalozzi's ideas, created the didactics of development teaching. He considered it necessary to take into account age and individual features of schoolchildren.

F.V.Shelling's development acts as a discovery (cognition) of what was already in indistinguishable form in the very "beginning". According to F.V.Shelling, to assume the possibility of occurrence is to admit the appearance of something from nothing. Since, from this point of view, the emergence can not have prerequisites, F.V.Shelling understood the development as a process of gradual change that does not involve qualitative leaps.

G.V.F.Hegel understood development as a process of formation of true knowledge as a result of historical development of fundamental contradiction between knowledge and subject, between subject and object. The consequence of this understanding of development was the denial of the natural, real process of generation, and the recognition of the generation only in the space of the inner idea, which is the basis of nature. G.V.F.Hegel denied the possibility of real processes of origin.

As a result, in the 19th century the concept of "development" acquired three main contents: development as preformism, development as epigenesis and development as evolution. Despite the difference in understanding of the content of development, in all three versions development is understood as a strictly natural process governed by internal factors and external conditions and having a certain sequence and length [1].

At the end of the 19th century in psychology the peculiarities of the development process were studied in child psychology, comparative psychology and psychology of nations. At first, phylogenesis regularities were studied in all these directions. However, gradually the study of phylogenesis allowed to look at ontogenesis in a new way. Soon the problem of a parity between phylogenesis and ontogenesis became a subject of concrete scientific researches.

The first version of the ratio between phylogenesis and ontogenesis was proposed by E. Gekkel. This ratio was called the biogenetic law on the basis of which the theory of recapitulation created later was based. On the basis of the theory of recapitulation S.Hall suggested the idea of periodization of children's development, according to which the child in his individual development repeats the basic stages of phylogenesis of a human kind (society) in the shortened form. In his concept, S. Hall, in fact, approved the biological determinacy of the development of the psyche. Development was understood as transition from one phase of the formed psyche to another. Such transition, according to S. Hall, is made in accordance with the main directions of evolutionary (historical) process. Based on the analogy between ontogenesis and cultural history of mankind, I.Teng suggested periodization of mental development, where the stages of mental development of a child exactly corresponded to the stages of cultural development in the history of human culture [1].

The further development of the psychological concept of "development" was decisively influenced by the evolutionary ideas of Ch.Darwin. Their essence was that the psyche changes together with the environment and serves to adapt the body to it. As a result, two new postulates of development appeared in psychology: about adaptation as the main determinant determining mental development, and about the genesis of the psyche. I.e., the fact that mental processes do not appear at once in a ready form, but pass in their development logical stages [3].

In the early 20th century, biogenetic law was a common concept. But there

were psychologists who interpreted the biogenetic law not in the sense of recapitulation, but as evidence that there is a general logic of the development of consciousness in phylogenesis and ontogenesis (E.Clapared) [1]. The evolutionary approach in psychology was most fully expressed in the concepts of A.Ben and G.Spencer. They argued that the psyche represents a natural stage of evolution and its function is to provide adequate adaptation to the environment. These theories, especially views of G.Spencer, have received wide circulation and have had huge influence on formation of psychological concept of development.

I.M.Sechenov's views had no less importance for the formation of the psychological concept of "development". He emphasized the importance of research into the mental development of a child. I.M.Sechenov's views, in particular, his idea of interiorization of mental processes, had a great influence on further formation of the psychology of development, including, perhaps, L.S.Vygotsky's concept [3].

But already in the 20th century the cultural-historical content of development begins to form (D. Baldwin, N. Lange, T. Ribo, J. Mead, etc.). J. Meade first suggested that the child's mental reactions were originally derived from his or her interaction with other people. In his works, P.F.Kapterev asserted the idea of parallelism between the psyche of children, the psyche of the modern "savage" and our distant ancestors.

In this connection, if earlier the concepts of ontogenetic development were based on the dynamics of the phenomena of individual consciousness, then in the beginning of the 20th century individual development began to be understood as the reproduction by an individual of individuate laws that govern the world of nature and the world of culture [1].

The predominant worldview of the whole variety of scientific ideas about development to this day remains the principle of evolution. But now it is fundamentally rethought and understood not only as the unfolding (growth and increase) of the originally given, but above all as a historical process of progressive changes of any system (its maturation, differentiation, complication, improvement) under the influence of external and internal conditions. Any cardinal change (metamorphosis) of this system implies a transition (leap) to another level of its organization and a new level of self-identity. A separate internal problem of the evolutionary approach is the question of sources, bases and mechanisms of the changes taking place. Today it is already obvious that the knowledge accumulated in the natural sciences

has no answer to these questions [2].

For former Soviet psychology, the problem of driving forces and determinants of mental development became the main one. Back in the early 20th century, the joint work of A.F.Lazursky and S.L.Frank led to the formulation of the idea of two spheres of mental activity - endopsychic (internal) and exopsychic (external). It was argued that the endopsychic sphere is based on the congenital properties of the human being and determines the congenital aspects of the personality. The exopsychic sphere of the personality is formed in the course of life. In its basis the system of relations of the person with surrounding world, with people, specifying how the person concerns to the basic factors of surrounding reality lies. From this point of view, introduction of the category of relations was a step forward in comparison with the mechanistic notion, according to which influences of the environment on an organism occur by type of external shocks.

In the 20-30s of the 20th century V.Y.Basov showed that in the process of development of psyche a person not only adapts to the environment, but also adapts it to himself. Thus, a man acts as an active figure in an objective, lawfully organized environment. From this position, V.Y.Basov concluded that mental and biological development are essentially different processes that are subject to different laws.

The development of an organism is determined by a mechanism that is biologically fixed in it. Therefore, although the environment affects the process of biological development in a certain way, the source of development is not in it, but in the organism itself. The development of a human being as an active figure in the environment, on the contrary, is determined by the surrounding society and, depending on conditions, may go differently. The main meaning of such development is that a human being effectively penetrates into the environment and influences it as a result of active cognition of it [3].

However, in general, the development of the psyche was still characterized by most psychologists as predominantly evolutionary, and the possibility to completely change the direction and individual features of the development process was gradually rejected. The idea of a combination of the literal and critical periods in the formation of the psyche was embodied later in L.S.Vygotsky's periodization [3].

Development psychology after the 90s of the 20th century

V.P.Zinchenko and E.B.Morgunov [4] believe that L.S.Vygotsky's cultural-

historical concept is based mainly on the cultural tradition in human sciences. At the same time, this concept also has a civilizational component. In particular, there is a provision that the inner world of a human being is formed by interiorization of the instrumental andsensory content of culture, that culture as if fills the inner space of an individual, displacing and transforming his natural (cash, established, ordinary, etc.) psychological structures. Some modern authors believe that one of the primary tasks of modern development psychology is the substantial synthesis of L.S.Vygotsky's cultural-historical concept in its classical version and A.N.Leontiev's activity theory as one of the historical interpretations of this concept [2].

The problem of development ontology is currently of particular interest. In this sense, development is a special being. In this case, the question is to understand how development is possible. B.D.Elkonin's works for the first time in domestic psychology allow us to clearly distinguish between "reality of development" and "development of reality", the act of development and the course of development, the unit of development and the object of development, which in traditional age psychology did not differ, and even today still continue to differ [2].

The problem of development ontology is directly related to the question of when a developed person becomes a subject of his or her own development? The conclusion is made that today the psychology of self-development and the pedagogy of self-development are especially necessary [2].

Conclusions. A detailed analysis of psychological concepts of development makes it possible to assert that at present the subject of all development concepts without exception is the so-called "horizontal" (functional) development. That is, such changes, which are directly related to the formation (improvement) of a new quality of a developing subject. At the same time, the processes of origin (origin; genesis) of his new quality, and even more so the processes of self-development, remain outside the framework of these concepts.

1.1.2 Development type correlation problem

(a) The phylogenesis-to-ontogenesis ratio problem

(historical and individual development).

It is one of the main challenges in the overall development issue. It is key because only with its solution can you be sure of the ontogenesis design

strategy. Individual human development is a socially organized process of human education. That is why it is necessary to have an adequate basis for designing and practical implementation of socially organized process of human development (educational process). There arises a problem of the nature of such a foundation.

To date, this problem has several solutions.

The first decision. The ontogenesis of the organism is an individual form of phylogenesis of the species. This statement is a biogenetic law, which at one time by analogy tried to transfer to the psychology of development. Nowadays, among psychologists, there are practically no supporters.

Second decision. Human ontogenesis and historical development of the human race are qualitatively different types of development [5, p.349]. If historical development is a process of origin of a new quality, then ontogenesis is a process of reproduction of already existing quality [5, p.349]. At the same time, the main characteristics of individual development usually include its rigid programmability, equifinality, closedness, in contrast to the unprogrammability, infinity and closedness of the historical process of development [5, p.349].

The second solution only seems to differ from the first one. In fact, Hegel also argued that in individual development a person must pass the stages of education of the general spirit. And education should reproduce in a concise form the history of education of the whole world [6, p.15]. The same point of view on the ratio of ontogenesis to phylogenesis takes place in Marx and Engels [7, p.128]. It consists in that individual development is a reduced repetition of cultural genesis [8, p.6].

In psychology, the opposition of ontogenesis and phylogenesis is the methodological basis for almost all known concepts of mental development (within its two main paradigms: social and reflexive and cultural and historical).

In the social-reflexive concept the criterion of contrast between historical development and ontogenesis is production-consumption [9, p.183]. On the one hand, it is argued that labor is the basic law of human development, producing sociality as the environment of own existence [10, p.51]. On the other hand, it is simultaneously asserted that in the childhood period, individual development is not based on labour, but on education and training. That is, as a result of the appropriation of social development products [11, p.129] [11,

p.130]. As a result, it is concluded that since the conditions of upbringing and training are different, all processes of individual development, including the course of development, its stages, etc., should be equally different. [9, c.182].

In the cultural-historical concept of development, the production-consumption criterion is also a criterion of contrast between historical development and ontogenesis. Namely, it is stated that the process of each individual development is unambiguously set by products of historical development, which are ideal forms of culture [12, p.29]. Individual development is the result of the assignment of cultural development products [13, p.114]. Thus, the generating character of historical development is opposed to the consuming character of individual development [14, p.294].

Third decision. Historical development and individual development coincide. This solution is based on several positions. First, the beginning of individual development and the beginning of historical development coincide [7, p.131] [15, p.131]. Secondly, both historical development and individual development occur as self-change [16, p.23] [17]. Thirdly, both historical development and individual development are caused by the same logic of the subject content. Only in historical development this logic acts as a logic of production, and in individual development it acts as a logic of consumption [9, p.183]. Fourthly, both historical development and individual development can be regarded as personal development [16, p.74].

The fourth decision. Individual development is a form of historical development. This solution is based on one of the most important statements of K.Marx that the social history of people is always only the history of their individual development [8, p.47].

This provision expresses the idea of the individual nature of man, as opposed to the idea of his social nature [10, p.26]. It means that social development has only one single - individual - form of implementation [8, p.47]. All cultural forms also have only one - individual - form of development [16, p.140]. On a larger scale, the individual nature embodies the idea of man as an inner force ensuring the development of the whole Universe [18, p.75].

The way to implement such individual development, which is the essence of social and cultural development, is self-development. Here self-development is understood as a human creativity of himself through the creativity of his social reality [15, p.160]. Ultimately, in this way the understood self-development carried out by the individual himself is a decisive factor that

changes the individual himself, society, social and cultural reality [19, p.67].

(b) The age/functional development issue

In psychology, "vertical" (age) and "horizontal" (functional) are regarded as the two main types of development. In the analysis of age development, it is assumed that there is a certain common for all "vertical" development processes sequence of stages of the emergence of a new quality of a certain mental phenomenon (properties; feature; ability, etc.). This phenomenon, selected as a criterion, eventually represents a substantial basis for the selection of appropriate periods in a particular process of qualitative change of the psyche.

At the analysis of functional development it is supposed that there are stages of formation of the concrete mental phenomenon uniform for all "horizontal" processes of development. It is considered that these stages do not depend on age within which the pattern of formation of the certain mental phenomenon (activity, ability, knowledge, skills, etc.) remains unchanged.

Analysis of the ratio of these two types of periodization was conducted in almost all scientific directions and schools. But if the first concepts of mental development initially referred to the dominant dominance of biological factor, and the development itself was understood as the maturation of innate qualities, then in the works of E. Clapared another approach to understanding the genesis of the psyche appeared. Speaking about the self-development of the psyche, he emphasized that it is the self-development of innate qualities, which depends on the environment that guides the process. E. Clapared first started talking about the specific mechanisms of the development process - play and imitation. But if S. Hall wrote about the game as a mechanism of mental development, the imitation of others and identification with them were first introduced into psychology by E. Clapared [3].

E. Clapared's idea of self-development, that the genesis of the psyche does not need external factors, but is embedded in the very nature of the mental, has become a leading one for V. Stern. He proceeded from the premise that the self-development of the human being's inclinations is guided and determined by the environment in which the child lives. His theory was called the theory of convergence, because it took into account the role of two factors - heredity and the environment. In Stern's opinion, psychological development tends not only to self-development, but also to self-preservation. That is, the preservation of the individual, congenital characteristics of each child, first and foremost,

the individual pace of development [3].

As a result of the conducted researches, nowadays almost all psychologists adhere to the unified opinion that the main factor determining the formation of any mental function of a person is training (teaching, learning). There are only divergent points of view as to how much significant changes training can make in the development of the mentality. Whether it should be developing and define the whole course of ontogenetic development of the human psyche, or training should be based on the actual level of the psyche development, which a person achieves naturally, and contribute to the optimal formation of the psyche arising independently of training [3].

One of the most important problems of correlation of two basic vectors of development is the problem of a role and function of each of them in the general process of mental development. Is age development defined as functional, or vice versa? In what way does age development influence on functional or functional development? What is the difference or similarity between the mechanisms of age and functional development? How are they represented in the overall mechanism of the holistic development process?

Currently, in post-Soviet psychology, there are two alternative points of view on the relationship between age and functional vectors of development. They are presented, respectively, in the social and reflexive and cultural-historical concepts of development. In one of them, the leading (the only one) is considered to be the vector of functional development. It represents processes of formation of internal conditions (the internal world of the person) as a result of determination of human activity by external social reasons. Thus, the age vector is either not considered at all, or is reduced to the functional one.

The other concept considers both vectors of development. In general, development is age (qualitative) and functional (quantitative) changes that occur in the psyche as a result of the targeted determinacy of the developing person's mediating activity. In this case, the age vector of development has the same value as the functional vector of development [3].

The process of functional development was subjected to in-depth systematic research by P.Y.Galperin and his staff. According to P.Y.Galperin, after preliminary orientation in the task, further formation of mental action passes a number of corresponding stages. The regularity of the step-by-step formation allocated by P.Y.Halperin is universal in nature. At the same time, the conducted research shows that functional and age development are not

identical, do not coincide with each other.

There are reasons to believe that age-related development, unlike functional development, consists not so much in the assimilation of individual knowledge and skills, as in the formation of new psychophysiological levels and new plans for reflecting reality, and is determined by general changes in the nature of child activity. It is connected with alterations in the system of relations between the child and the subject world and surrounding people [20].

P.Y.Halperin himself noted the limitations of the second type of exercise in terms of ensuring their development. He associated true development with another, the third type of doctrine, which, in particular, provides the formation of cognitive motivation. At the same time, A.V.Zaporozhets believed that the whole direction of P.Y.Galperin's works, though connected with the problem of development, but the development of a special type - functional, not stadium. At the same time, A.V.Zaporozhets actually introduced a criterion for differentiation between two main types of development [21].

Studies show that the processes of functional and stadium development are closely related to each other, but not identical. Functional development is possible in people of different ages. It occurs when a person assimilates separate mental actions and acquires an opportunity to perform them in new plans. Actually, age development consists in forming these plans as such. In other words, the process of age-related changes in a person's psyche is much deeper and more fundamental; it cannot be reduced to the acquisition of separate knowledge and skills, even those that significantly expand the possibilities of his or her activity.

The premise of learning leadership remains valid even with this understanding of development: it is recognized as the cause of development. However, age-related development also requires maturation, as opposed to functional development, which can take place within a single maturation period. In addition, age-related development is based on a radical change in a person's life position, establishment of new relations with people, formation of new motives for behavior and values [21].

1.1.3 Learning/development ratio issue

The problem of the ratio of "learning and development" became actual thanks to the research of K.Koffka, J.Piaget, L.S.Vygotsky and other psychologists at the turn of the 20-30s [22, p.76]. But even now it is one of the most important in a problem of mental development.

At the initial stages of development research, in biogenetic concepts and, above all, in G.S.Hall's theory of recapitulation, it was argued that learning should be built upon at each specific stage of development, since it is the maturation of the organism that prepares the basis for its learning. In this case, the problem of the relationship of learning and development is solved in favor of development: development leads to learning, and the age vector of development is dominant in relation to the functional.

In behaviorism, the problem of the ratio of learning and development is solved by identifying learning (learning) and mental development: learning is development, and the functional vector of development is dominant (if not the only one) with respect to age.

A solution similar to behaviorism is proposed in S.L.Rubinstein's social and reflexive theory of mental development, which belongs to another class of theories. Nevertheless, he too believed that learning should neither be built upon nor outrun by development. The problem of the relation between learning and development is solved by the identification of learning and development [11, p.128].

In Gestalt psychology, it was believed that learning can outpace development (maturation), or may lag behind it. But more often these processes go in parallel, creating the illusion of mutual dependence. The problem of the relationship between learning and development is solved by postulating the independence of learning and development: learning cannot accelerate the process of mental development (maturation and differentiation of Gestalt), and maturation cannot accelerate learning.

In cultural-historical theory it is believed that learning can only be developmental if it creates and sets the zone of immediate development. L.S. Vygotsky believed that the level of potential development corresponds to the abilities of the child, while the level of actual development corresponds to his or her learning. The problem of the ratio of learning and development here is solved in favor of learning: learning leads to development.

Genetic psychology denies the possibility of developmental learning. J. Piaget believed that adults could not help the child to change the scheme of action, to move to a new stage of thinking until he himself was ready for it. Children, depending on their abilities, come to the discovery of new schemes faster or slower, regardless of the quality of learning. J. Piaget did not rule out the possibility of learning "in the narrow sense of the word," helping the child to

extend the new schemes opened by him or her to different aspects of their activities. Here the problem of the learning relationship is solved by postulating the independence of learning and development in genetic development and the leading role of learning in functional development [3].

In general, the problem of the ratio of learning to development is still unresolved, despite its essential importance for solving the problem of mental development in general.

There are, in our opinion, several reasons for this state of affairs. First, there is no psychological analysis of the concept of "learning" in psychology. As a rule, researchers use intuitive notions rather than scientific concepts of learning. Second, each of the researchers puts its own meaning into the term "development". Therefore, in the problem of the relationship between learning and development there is no single scientific subject, and each researcher has his or her own intuitively defined field of research. Third, learning continues to be understood as the process of translating social experience, in which the learner always acts as an object of translation, even as a subject of appropriation activity. Fourth, based on the idea of human social nature, which is still leading in psychology today, development can only be seen as externally deterministic. Fifth, consideration of self-development as a leading form of development in ontogenesis implies a radical change of views on nature as a determinant of human development, which implies a change of attitude to the educational process (abandonment of the cultural-consuming nature of education and recognition of its cultural nascent nature).

1.2 The problem of individual development determinacy

1.2.1 Endogenous determinacy of individual development

Aristotle. As an internal force of development is entelechemistry, which, maturing, determines the ontogenetic development of man [1].

J.A.Comenius believed that in training it is necessary to offer the child what he is best placed to. According to Komenskyi, a child is an active component of the subject-object relationship. The external environment performs a passive function of feeding the active maturation process [1].

The main idea of J.-J. Rousseau is that man is determined by his inner nature. It depends on the external social environment, as far as the internal nature can be developed in the process of maturing. Upbringing serves as a way to create the necessary conditions for maturing [1].

Ch. Darwin believed that in every person there is a pre-tasking, due to the constitution. The environment only carries out selection [1].

According to S. Hall, the sequence and content of ontogenetic stages are set genetically and therefore a person can neither evade nor miss any stage of his development in ontogenesis. Thus, S.Hall considers ontogenetic process of development as biologically determined. The mechanism of transition from one ontogenetic stage of development to another, according to S.Hall, is a game [2].

A.Gezell shared the provision that in the first years of life the child repeats the history of development of the human race. But he believed that childhood was also the result of evolution. The period of childhood is the longer the species is located on the evolutionary ladder. Though man has a childhood qualitatively different from the childhood of animals, nevertheless, the general biological function of psyche - adaptation to environment - is preserved in man. He proposed a normative theory of children's development, according to which, starting from the moment of development, at strictly defined intervals, at a certain age, children have specific forms of behavior that successively replace each other. The main role in the mental development of the child A.Gezell assigned to the maturation of the nervous system. The main indicator of mental development is its rate. The basic law of mental development: the rate of development is maximal at initial stages of development and minimal at final stages [2].

K. Bühler shared the widespread view of human mental development as a single (biological in nature) process. K.Bühler believed that nature does not make leaps; development always happens gradually. He defended the idea of inheritance of mental properties, their transfer from parents to children. K.Bühler believed that the main interest should be focused on the early years of the child. It is at this time that the basic mental function matures. In his opinion, the main purpose of research is to understand and study biological functions of the psyche and the internal rhythm of its development [2]. K.Bühler suggested the theory of three stages of development (instinct, dressura, intellect). He believed that the transition from one stage of development to another is determined mainly by the development of cortical structure. That is, it has purely biological causes [3]. In K.Bühler's opinion, in the course of the evolution of behavior in general, there is a transition of pleasure from "end to beginning". According to K.Bühler, the transition of pleasure from "end to beginning" is the main driving force of behavior

development. He transferred this scheme to ontogenesis as well [1].

H. Werner formulated the orthogenetic principle, which was also used in later theories of mental development. Orthogenesis is the theory of development of a living nature according to which evolution is carried out in strictly certain direction, submitting to a principle of initial expediency in nature. The orthogenetic concept in psychology tries to describe mental life as a whole and its development. With this purpose H.Werner has carried out the comparative analysis of various evolutionary processes: phylogenesis, ontogenesis, microgenesis, ethnogenesis, pathogenesis. He considered that psychology of an individual person and psychology of human race, psychology of animal and child, psychopathology and psychology of special states of consciousness have common genetic basis.

According to H. Werner, all organisms are born with minimum-level species functional structures that allow them to interact with the environment to assimilate experience and stimulation. The body actively adopts and explores the properties of the environment, which leads to physiological and/or mental development.

Just as physiological structures can assimilate only those properties of environment for which they have physiological organs, psychological structures selectively define character of interaction and result of experience of developing organism. This experience is fixed in functional structures which were an initial source of interaction. Such feedback leads to qualitative transition from one stage to another. According to H.Werner, this is the objective reason for development: the organization of previous stages logically implies, but does not contain the organization of subsequent stages. Since organization at the next stage is different from the previous one, the interaction of the body with the environment changes throughout life.

H.Werner proposed the principle of genetic spiral, according to which on each new coil all mental processes become more differentiated on the one hand, and on the other - more integrated, specific. According to Werner, the key to the development process is the idea of interaction, for the characterization of which he uses the metaphor of "actor-scene". The environment is a stage, or an object for the action and development of the organism, while the organism is an actor, or a subject, on this stage. The organism does not just react to the environment, it is the operator on its stage. In the course of development, there is a shift in the "stage-actor" interaction towards the actor. At the primitive stage of development, the "stage" (or psychological environment) is the first

initiator of the interaction. At more developed stages, the organism becomes the primary initiator of the interaction; it increasingly predetermines its own behavior in this interaction. In this sense, the "actor" becomes more spontaneous, independent and active, creating the very content of the "scene" to meet its needs and achieve its goals. According to H.Werner's views, the development process is a transition from undifferentiated functioning to a differentiated, specialized and hierarchically integrated one [1].

A. Buzeman, characterizing the development, distinguishes five types of changes: 1. specialization - movement from undefined to certain; 2. differentiation - movement from heterogeneous to homogeneous; 3. stabilization - movement from variable to simple; 4. coordination - movement from arbitrary to constant; 5. structuring as a hierarchical organization [1].

E. Clapared played a significant role in creating a developmental psychologist. He was a proponent of self-development, understanding it as a self-displacement of the existing human deposits at birth. He believed that mental development did not need additional stimuli for its realization. According to E. Clapared, the mechanisms of mental development are game and imitation. Among them, he singled out the game, believing that the game is a more universal mechanism, as it aims at the development of different aspects of the psyche (general and special). Imitation, according to E. Clapared, is more connected with the development of behavior and arbitrary activity. Along with E.Clapared, A.Bine was one of the first to study the features of mental development. He studied the features of the stages of thinking development, which led him to the idea of normalizing intellectual development [3].

The Convergence Theory of Two Factors (Theory of Personism) by V.Stern. According to V.Stern, a child is an organism which at birth already has certain organic inclinations, instincts, congenital urges. These internal features represent the first factor of mental development. The second factor is the influence of the environment - natural and social.

V.Stern has put the spiritual development of the child in the center of his research. The study of the holistic personality and the regularities of its formation became the goal of the theory of personalism developed by him. He believed that mental development is not just a manifestation of congenital endogenous factors and not a simple perception of external influences, but the result of the convergence of internal and external conditions of life. In this theory, endogenous factors were preferred to environment factors, as W. Stern suggested that hereditary factors could be developed only in suitable

environment conditions.

V. Stern believed that a person is a self-determined, consciously and purposefully acting integrity. Possessing a certain depth (conscious and unconscious layers). He proceeded from the fact that mental development is self-development, self-displacement of the human inclinations - guided and determined by the environment in which the child lives. According to V.Stern, the mechanism of mental development is introception as a way for a child to connect his or her inner goals with those set by the social environment.

The social environment allows the child to become aware of himself or herself, organizes his or her inner world, gives it a clear, formal and conscious structure. At the same time, the child takes from the environment everything that corresponds to his or her potential aptitudes, and puts barriers on the way of those influences that contradict his or her aptitudes. The conflict between the external (pressure of the environment) and internal (inclinations) generates negative emotions that stimulate the development of self-consciousness. Frustration, preventing introception, forces the child to analyze himself and the external environment,

V.Stern believed that emotions are connected with the evaluation of the external environment, help socialization and develop reflexion. The integrity of development is manifested not only in the fact that emotions and thinking are closely connected with each other, but also in the fact that the direction of development of all mental processes is the same: from periphery to center (from contemplation (perception) to representation (memory) and further to thinking).

The theory of two factors, although it takes into account the role of external influences in development, represents in its essence the concept of hereditary predetermination of mental development. Social factors act only as conditions implementing hereditary features of mental development [2]. At the same time, V.Stern has the idea that the main role in unfolding heredity is played by the child's own activity [1]. V.Stern's works have influenced practically all areas of psychology of development, as well as the views of many outstanding psychologists engaged in problems of development of the psyche [3].

1.2.2 Exogenous determinacy of individual development

Simultaneously with the endogenous, exogenous theories were formed in

which the priority of the external environment over the subject was assumed. At the same time, the subject was described as tabula rasa ("blank slate"), on which the external environment imprints itself. In this case, the environment is an active component, while the subject, the individual, and the organism are just "scenes" on which the game unfolds by externally defined rules.

These theories also have a long history, but they began to penetrate into the psychology of development only in the 20th century thanks to the theoretical attitudes of behaviorism, according to which man is what makes him his environment, the external environment. If in biogenetic theories there is an identification of quantitative growth and development, then in behaviorism there is an identification of development and learning, the acquisition of new experience and development. If Darwin's theory of evolution had a considerable influence on the formation of the biogenetic approach, then I.P. Pavlov's ideas play an important role in the formation of theories of development as learning [1].

In classical behaviorism, the determinant of mental development is the external environment. Mental development is identified with learning, i.e. with any acquisition of knowledge, skills and abilities, not only specially formed but also arising spontaneously. From this point of view, learning is a broader concept than learning, as it includes and purposefully formed knowledge in learning. The study of mental development in behaviorism is reduced to the study of behavioral formation, connections between S stimuli and R (S - R) reactions arising on their basis. On this basis, mental development depends mainly on the social environment and external conditions (stimuli).

In this regard, behaviouralists reject the idea of age periodization, because they believe that there are no common development patterns for all children at a given age. The proof of this situation was the research of teaching of children of different ages, which showed that with purposeful teaching already two-three years old children can not only read, but also write and even type on typewriter. By this, the conclusion is drawn that periodization depends on the environment: what is the environment, and the regularities of mental development.

However, the impossibility of creating age periodization does not exclude, from their point of view, the need to create functional periodization, which would allow to deduce the stages of learning, the formation of a certain skill.

From this point of view, the stages of development of playing abilities, learning

to read or swim are functional periodization, as well as the stages of formation of mental actions (according to P.Y.Galperin).

The research carried out by E. Thorndike led him to the idea that mental processes are internalized external reactions. Thus, the main mechanism of development in behaviorism is interioration, due to which the inner content of mental life is formed [3].

B.F.Skinner identifies development and learning, pointing out their only difference: if learning covers small periods of time, development is relatively long periods. In other words, development is the sum of learning, stretched over long periods of time. According to B. Skinner, human behavior is entirely determined by the influence of the environment and, like the behavior of animals, it can be deliberately designed and controlled [1].

In classical behaviorism, the problem of development was not posed as such. Here there is only a problem of learning based on the presence or absence of reinforcement under the influence of the environment.

The search for answers to the question whether learning (i.e., whether the stimulus-response relationship) depends on the subject's states of hunger, thirst, and pain, which the American psychologist called drive, has led to the need for more complex concepts of learning. Such concepts were developed by N. Miller and C. Hall. Here, a turn from the strictly behavioral experiment of the Pavlovsk type to the study of motivation and cognitive development of the child was outlined [1].

1.2.3 Multiple determinants of individual development

Psychoanalytic concepts of mental development

In deep psychology, the determinant of mental development is the genetically determined (biological) factor. Deep psychology proceeds from the assumption that the main determinant of mental development is the desire to adapt to the environment. Although the environment was not subsequently perceived by leading psychoanalysts (except for Z. Freud) as completely hostile, psychoanalysis still believes that it is always opposed to a specific individual.

At the same time, mental development is seen primarily as motivational, as the formation of the emotional and consumer sphere of a person. Unconscious aspirations serve as a force that stimulates and guides the development process.

Since this energy is inborn, development is, in fact, seen as a spontaneous process, as a transformation of those affections that are inherent in a person (aggression, libido, anxiety, feelings of inferiority, etc.) and are not realized by him.

The statement that the driving forces of mental development are inborn and unconscious unites a large group of theories in a single direction. An important discovery of in-depth psychology was the provision that mental development is a process of socialization of the child. The basic mechanisms of mental development, which are also congenital, lay the foundation of personality and its motives already in early childhood. The leading mechanisms of mental development are: identification (identification) and compensation. Further on, the structure of the personality does not change significantly [3].

One of the key ideas of Z.Freud's psychoanalysis is that the causes of internal conflicts and neuroses of an adult are in his childhood. Restoration of the history of human development in early childhood is a method of learning about human nature [2]. On the basis of general theses of psychoanalysis, Z.Freud formulated the ideas of the genesis of psyche and personality: the stages of ontogenetic development correspond to the stages of movement of the zones in which the primary sexual need finds its satisfaction. Freud's psychosexual development is identified with personal development. These stages reflect the development and relationship between Id, Ego and SuperEgo [2].

In his concept, A. Freud describes the stages of development of each of the basic components of the personality structure (Id, Ego and Super-Ego). Id development takes place along two vectors (libido and mortido) and is carried out at the oral, anal-sadistic, phallic, latent, pre-pubert and pubertal stages respectively. The development of Ego is carried out in accordance with the development of protective mechanisms: displacement, reactive formations, projections and transfers, sublimation, cleavage, regression, and so on. The development of Super-Ego takes place in two stages: identification with parents and interiorization of parental authority. In general, A. Freud sees development as a process of the child's socialization, subject to the law of transition from the principle of pleasure to the principle of reality. The child's advancement from the principle of pleasure to the principle of reality is closely connected with the development of thinking, memory, etc. On the other hand, the formation of the principle of reality and the development of thinking processes open the way for such mechanisms of socialization as imitation, identification, introception. They all contribute to the formation of Super-Ego

[1].

Erickson accepted the idea of unconscious motivation, but believed that the foundations of the human "I" are rooted in the social organization of society. He tried to understand and evaluate the influence of the environment on the individual, which constructs it exactly like that, not the other. These studies gave rise to two key concepts of his concept - "group identity" and "ego-identity".

Formation of ego-identity of a person continues throughout life and passes through eight stages, at each of which a person makes a choice between two alternative stages of solving development problems. The tasks and content of development at each stage are determined by the society in which the person lives. According to Erickson, the solution of each of these problems is to establish a certain dynamic relationship between the two extreme poles. The equilibrium achieved at each stage marks the acquisition of a new form of ego-identity and opens up the possibility of including the subject in a wider social environment.

To be oneself in the eyes of significant others, including one's own, is the driving force of development that Erickson puts at the base of his periodization. Entering into new relationships with others, a person more or less unconsciously makes choices that determine the direction of development at each age level. The transition from one form of self-identity to another causes identity crises. But crises are not a disease of personality, not a manifestation of neurotic disorder, but "turning points", moments of choice between progress and regression, integration and delay [2].

Cognitive concepts of mental development lead from the philosophical theory of cognition. Intersecting with biology, the theory of cognition is connected with solving problems of adaptation of an individual to surrounding social and subject environment. The main purpose of this direction is to find out in what sequence the cognitive structures providing adaptation are deployed.

In J. Piaget's genetic psychology, cognitive development is considered the basis for the development of the psyche as a whole. Piaget proceeded from several basic provisions. First of all, it is a provision on the relationship of the whole and part. Since there are no isolated elements in the world and all of them are either parts of a larger whole, or themselves are divided into small components, the interactions between the parts and the whole depend on the structure in which they are included. In the general structure their relations are

balanced, but the state of equilibrium is constantly changing [1].

J. Piaget sees development as an evolution driven by the need for balance. He defines equilibrium as the stable state of an open system. Static equilibrium, already realized, is an adaptation, an adaptation, a state in which each action equals resistance. From the dynamic point of view, equilibrium is the mechanism that provides the main function of mental activity - the construction of the concept of reality, provides a connection between the subject and object, regulates their interaction [1].

J. Piaget believed that, like any development, intellectual development tends to a stable equilibrium, i.e. to the establishment of logical structures. Logic is not born from the beginning, but develops gradually. So what makes it possible for the subject to master this logic? In order to know objects, the subject must act with them, transform them - move, combine, delete, bring them closer, etc. The meaning of the idea of transformation is as follows: the boundary between the subject and the object is not established from the very beginning and it is not stable, so in every action the subject and the object are mixed.

All the acquired sensomotor experience is formalized, according to J. Piaget, in the scheme of action. "Scheme of action" is the most important concept in J. Piaget's theory. The scheme is the sensomotor equivalent of the concept. The scheme of action is that general (invariant), that remains in action at its repeated repetition in different circumstances. It is mental structure, at certain level of mental development. It is a thinking system or integrity that reproduces the logic of substantive actions [2]. It allows a child to act adequately with different objects of the same class or with different states of the same object. From the very beginning, the child learns from the action. All these experiences are framed in schemes - the most common thing that is preserved in action when repeated in different circumstances.

J. Piaget believed that the scheme is not given to man in a ready-made form at birth, there is no such scheme in the world around him. Po. Piaget, adaptation is an active process of adaptation, as a result of which, as his product, schemes (of the world and his own action in the world) appear. The scheme is produced by the person (child) himself in the process of active interaction with the world around him. There are two mechanisms for producing the scheme: assimilation and accommodation.

According to J. Piaget, development is a process of alternating assimilation and accommodation, where a child tries to use the old scheme up to a certain

limit and then builds a new scheme that is more adequate [3]. According to J. Piaget, the stages of mental development are the stages of intellectual development, which the child consistently passes through in the formation of an increasingly adequate scheme of the situation. This scheme is based on logical thinking.

Development is made as a transition from the lowest to the highest stage, with each previous stage preparing the next one. At each new stage, the integration of previously formed structures is achieved. The previous stage is rebuilt at a higher level. The order of stages is unchanged, although it does not contain an inherited program. Maturation in the case of the stages of intellect is reduced to the discovery of development opportunities, and these opportunities still need to be realized. Stages of intellectual development can be considered as stages of mental development as a whole, since the development of all mental functions is subordinate to and determined by the intellect [1].

According to J. Piaget's ideas, the order of stages of intellectual development corresponds to certain ages, it is invariable. Adults can influence the process of mental development, but they are not able to change its logic. Learning follows development [2].

L. Kohlberg suggests three types of orientations forming a hierarchy as a criterion for determining the stages of development: 1. orientation towards authorities; 2. orientation towards customs; 3. orientation towards principles. Developing the idea put forward by J. Piaget and supported by L. Vygotsky that the development of a child's moral consciousness goes along with his mental development, L. Kohlberg singles out several phases, each of which corresponds to a certain level of moral consciousness. The complication and differentiation of social relations is a prerequisite for the autonomy of moral judgments. Besides, the style of an individual's moral judgments inevitably depends on what this society sees as the source of moral prescriptions - God's will, community establishment or just a logical rule. Thus, the center of gravity of problems is transferred from the intellectual development of the individual to the social and structural characteristics of society, macro- and micro-social environment, on which the degree of personal autonomy directly depends. L.Kohlberg believes that the development of morality in both a child and an adult is spontaneous, so no metric is possible here [1].

In Gestalt psychology the process of mental development is the growth and differentiation of Gestalt. Gestalt is a holistic form that constitutes the content of the psyche. The process of their change and transformation determines both

the nature of understanding and behavior in the outside world. As the perception of the surrounding world defines and guides this process of formation and transformation of Gestalt, it is perception that is the leading mental function of the mental development in general. According to Gestalt psychologists, mental development consists of two independent and parallel processes: maturation and training. K.Koffka emphasized their independence, proving that in the process of development training can be ahead of ripening, and can lag behind it, though more often they go in parallel with each other, creating illusion of interdependence. Most importantly, learning cannot accelerate the maturation and differentiation of Gestalt, just as learning cannot accelerate the maturation process [3].

Sociological (culturological) concepts of human mental development.

In the psychology of development, the direction of socialization emerged as an attempt to define an attitude in the system of the subject-object (environment) through the category of the social context in which the child develops.

A special role in development psychologists belongs to D.M.Baldwin, an American psychologist and sociologist. At the beginning of the 20th century, he was one of the few psychologists who considered it necessary to study not only cognitive, but also emotional and moral development. D.M.Baldwin believed that society was not an external condition, but an internal factor of development of the child's psyche. He believed that a dialectical approach was necessary in the analysis of spiritual development. That is, one should simultaneously study both what the individual is from the social point of view and what society is from the point of view of the individual.

D.M.Baldwin was one of the first to prove that spiritual development is influenced by innate and acquired qualities. Both social environment and heredity determine the level of human social achievements in a particular society. Therefore, individual differences are the peculiarities of processes of learning and acceptance of factors provided by society. D.M.Baldwin singled out special mechanisms of thinking development: assimilation (interiorization of environmental influences) and accommodation (organism change) [3].

French School of Sociology

The patriarch of the sociological direction in psychology is considered E. Durkheim. He assigned a decisive role in the development of the child to the social factor, which, according to E.Durkheim, is based on collective ideas. According to E.Durkheim, collective ideas are an integral system of ideas,

customs, religious beliefs, moral principles, social institutions, writing, etc. They are independent of the individual, imperative in relation to the individual, total (universal).

The child's development takes place in the process of assimilating collective perceptions. The learning of social experience takes place through imitation, which is as important in social life as heredity in biology. With imitational capacity, the child is born. The French school of sociology has discovered a mechanism for shaping the child's inner world: interiorization as the transition of the external to the internal.

P.Zhanet believed that the psyche is socially conditioned and that its development consists in the formation of a system of various links with nature and society. By connections P.Jeanet understood actions as forms of the relation of the person to the world. Social relations between people are the basis of development of each person.

French genetics school

A. Wallon proceeded from the biological concepts of anabolism and catabolism, which, in his opinion, relate not only to the body, but to the individual as a whole. A.Vallon considered anabolism as a reaction of a man aimed at changing his inner state. Catabolism - as a reaction directed outwardly, to change the environment. A.Vallon understood the development as an alternation of anabolism and catabolism, repeating on each new round of development, accompanied by the formation of a new quality. According to A.Vallon, the psyche can not be reduced to the organism, but at the same time can not be explained without it. To explain how the organic becomes psychic, A.Vallon considers the connection of four phenomena: emotion, motor skills, imitation, society. A. Vallon emphasizes that society is absolutely necessary for development. Therefore, a human child is a social creature genetically, biologically. Social nature is not imposed by external influences, but social is already included in biological as absolute necessity.

A. Vallon does not deny the role of maturation in development. In his opinion, nervous system maturation creates a sequence of types and activity levels. But for maturation requires exercise, and it is already contained in the nature of emotions, motor skills and imitation. In the nature of the human body itself, according to A. Wallon, ontogenesis does not reproduce phylogenesis. Thanks to the new technique, which imposes the ability to think and feel, the child is always on the same level as civilization.

A. Vallon showed that among the conditions affecting the mental development, the greatest importance, especially in the first years of life, are the relationships of people and their ways of behavior. The child's mental development is carried out through qualitative transitions from one stage to another. The transitions themselves are made through development crises. [1].

R.Zazzo, being simultaneously a pupil of A.Walloon and A.Gezell, studied the role of heredity and environment interaction in mental development. He believed that these factors are complementary to each other: through heredity, a person creates his environment, and the environment gives heredity the opportunity to express themselves, orientation, design.

American School of Cultural Anthropology

F.Boas, the founder of the school, believed that the main methodological setting of the school should be the provision on cultural conditioning of human consciousness and personality in the process of his mental development. The method of checking the theory of cultural determinism was cross-cultural studies of mental development.

M.Mead's research has shown that people's character and abilities depend crucially on what they learn and on the structure of the society in which they were born and raised. Differences between members of different cultures, as well as differences between individuals within the same culture, are almost entirely confined to differences in their living conditions, especially in early childhood. M. Meade developed a concept of intergenerational relations based on three types of cultures: post-figurative, in which children learn from their ancestors; configurative, in which both children and adults learn from their peers; and pre-figurative, in which adults learn from their children.

Cross-cultural research on children's cognitive development

D. Bruner believed that the development of cognitive activity is carried out through the formation of three main ways (means): subject actions, images of perception and symbols. These means arise at appropriate ages. "Enriching" each new way of cognition to the previous one is the central line of the child's intellectual development. The essence of D. Bruner's position is that the mental development of an individual person occurs in the process of learning the means of culture. He notes that the sources of human development are fundamentally different from those of animals. Unlike an animal, human adaptation to the environment is not based on biological changes, but through the use of means of cognition having a social nature. Mental development is

determined not by biological factors, but primarily by cultural conditions of its life [2].

Cultural and Historical Concept of L.S.Vygotsky's Development.

One of the author's fundamental ideas is that two intertwined lines must be distinguished in the development of a child's behaviour. One is natural maturation, the other is cultural improvement, mastering cultural ways of behavior and thinking. Cultural development consists in mastering cultural signs. Cultural development involves mastering behaviours based on the use of signs as tools for psychological operations.

L.S. Vygotsky proposed two concepts that define each stage of age development: social situation of development and neoplasm. He found that a child in mastering himself (his behavior) goes the same way as in mastering the external nature. In other words, from the outside. He or she is mastering himself or herself as one of the forces of nature through cultural signs. - Fundamental contradictions of development, which develop towards the end of each segment of life and "pushing" development forward, lead to a leap in development (to a change in the social situation of development) and the emergence of new growths. In the periodization of development L.Vygotsky suggests alternating stable and critical ages. In stable periods there is an accumulation of quantitative changes in development. In critical periods there are qualitative changes, which in stable periods are subject to quantitative changes. At each stage of development there is always a central new formation, as if leading to the entire development process and characterizing the restructuring of the whole personality of the child on a new basis.

Understanding the development as a continuous process of self-moving, continuous emergence and formation of the new, L.S.Vygotsky believed that the new formations of "critical" periods in the future are not preserved in the form in which they arise and are not included as a necessary constituent of the integral structure of the future personality. They die, being absorbed by the neoplasms of the next (stable) age, including in their composition, dissolving and transforming into them.

The development theory led L.S.Vygotsky to the formulation of the link between learning and development and the concept of "the zone of the nearest development". L.S.Vygotsky has offered the thesis: only that training is good which is ahead of development, creating a zone of the nearest development. Learning is not development, but an internally necessary and universal moment

in the process of development of cultural and historical features of a child. In training, the prerequisites for future neoplasms and to create a zone of immediate development, ie, to generate a number of processes of internal development, need properly constructed learning processes.

Activity theory of mental development

A.N.Leontief.

A.N.Leontief's theory of mental development consists of two parts that are not directly connected with each other. The first refers to phylogenesis of the psyche, the second - to its ontogenesis. In phylogenesis of the psyche A.N.Leontiev distinguishes six stages. The basis of the phylogenetic concept of mental development of A.N.Leontiev is the genesis of reflection forms. The basis of the ontogenetic concept of mental development of A.N.Leontiev is the general psychological theory of activity. Its structure unfolds in two planes - external and internal. A.N.Leontief considers psyche as an interiorized activity. Therefore any forms of mental reflection are forms of activity. The principle of activity was put in the basis of the concept of ontogenesis of psyche.

A.N.Leontiev projects the age structure proposed by L.S.Vygotsky on the structure of activity. Therefore, the driving force of development is the contradiction between the needs of the child and his possibilities. He replaces the notion of a leading neoplasm with the notion of leading activity, and different types of activity are considered as development lines. At the same time, the central line of development for a given age is the leading type of activity, the side activities are the other types of activity, which in other ages become the leading and therefore the central ones.

A.N.Leontief believed that a person is born with a certain inborn (definitely reflexive) organization of species behavior. But the decisive role in a man's mental development is played by appropriation of historical experience of people by a certain individual, the most important part of which is their socially developed mental abilities, which are marked in material and spiritual culture.

Assignment is the process of a child's reproduction of historically formed human properties, abilities and behaviors. Reproducing activity determines the child's mental development at each age stage. However, the formation of reproducing activity and corresponding abilities takes place in a child only in constant communication with adults and other children. The need for interiorization is determined by the fact that the central content of a child's development is appropriation of the achievements of the historical

development of people who initially appear before him or her in the form of external objects and external verbal signs. Their specific social significance can be reflected in the child's consciousness only through the implementation of activities adequate to what is embodied and perceived in them.

But the child can not independently develop and perform this activity. It should always be built by people around in interaction and communication with the child. I.e., in external joint activity in which actions are detailed. Their performance allows the child to assign the values connected with them. And this assignment requires the transition from externally deployed actions to actions in the verbal plan, and finally, the gradual interiorization of the latter, as a result of which they acquire the character of coiled-up mental operations, mental acts. In the future, the independentpromotion of a child's thought is possible only on the basis of already internalized historical experience.

D.B.Elkonin's concept of mental development.

He built his theory of mental development on the basis of the psychological theory of A.N.Leontiev's activity. D.B.Elkonin's views on the general nature and sources of mental development of the child are reduced to the following. First, all kinds of children's activity are public by their origin, content and form, therefore the child from the moment of birth and from the first stages of its development is a public being. Second, the appropriation by a child of the achievements of human culture is always of an active nature. The child is not passive in this process, does not adapt to the conditions of his or her life, but acts as an active subject of their transformation, reproducing and creating in itself human abilities.

Main provisions of the theory of development: 1. conditions of development - growth and maturation of the organism; 2. source of development - ideal forms (social environment), i.e. what development should come to at the end. Everything that should appear in a child already exists in society, including needs, social tasks, motives and even emotions; 3. form of development - assimilation; 4. driving forces of development - contradiction between assimilation of the subject and the public side of action.

In D.B.Elkonin's opinion, the course of development is determined by the movement from the system "child - public adult" to the system "child - public subject". That is, first the child is assigned ways of social activity, and then on this basis the relations with the cultural subject world are established. - D.B.Elkonin opened the law of periodicity of two types of activity: the first

type of activity (orientation in the system of social relations) is followed by the second type of activity (orientation in the ways of using the subject). The contradiction between these types of activities is the reason for development.

Theory of Personal Development L.I.Bozhovich.

It is based on the concepts of social situation of development and personal neoplasm. In the social situation of development the internal processes of development and the external conditions providing them are distinguished. In personal neoplasms, the central neoplasm is distinguished. Development periodization is similar to periodization suggested by L.Vygotsky.

Theory of Communication Development by M.I.Lisina.

It is based on the psychological theory of A.N.Leontiev's activity. Communication is considered as communicative activity. M.I.Lisina considers the need for communication to be a special need, different from others. She singles out four periods of development of communication: 1. situational-personal communication with an adult (2 months - 6 months); 2. situational-business communication (5 months - 2 years); 3. extra-situative-indicative communication (3 - 5 years); 4. extra-situative-personal communication (6 - 7 years) [1].

Humanist concepts of mental development

In humanistic psychology there is currently no developed theory of mental development. In humanistic psychology, the central is the demand-motivating sphere of the individual. The idea that the individual is an open and self-developing system is central to humanist psychology. Representatives of this sphere proceeded from the fact that a human being is first of all a biological being, but cannot develop outside of contacts with social environment.

Humanist psychology was the first direction in the history of psychology that put forward the position that man does not seek balance with the environment, but seeks to break it. Balance, adaptation, and rootedness in the environment reduce or negate the urge for self-actualization, which makes man human. Therefore, self-actualization is the main goal and main determinant of human and social development. But social pressure hinders spiritual growth, reduces the autonomy and independence of the human being. Therefore, along with identification, a new mechanism of development is introduced - alienation, which is connected with the need to preserve one's own self, existence from the pressure of the surrounding social world [3].

S. Buhler's theory of mental development.

Her works devoted to the study of human life path were of great importance. She was one of the first to introduce this concept, considering life as a holistic formation of the individual. The main driving force of such development, in her opinion, is the need of the individual for self-realization, which manifests itself in different ways during life. This research later led her to humanistic psychology [3].

In the works of K.Rogers, a new concept of man was formulated that differs from psychoanalytic and behavioral notions. The fundamental premise is that people rely on their own experience in their self-determination. Each person has a unique field of experience ("phenomenal field"). The field of experience is limited psychologically and biologically. A person's inner world may or may not correspond to objective reality, may or may not be realized. The field of experience is the self. The person's self, or self-perception, is based on past experiences, present data, and future expectations. The ideal self is the view of the person's self as he or she would most like to have and to which he or she attaches great value. It, like the self, is subject to constant redefinition and development. The extent to which a self differs from an ideal self is one indicator of discomfort, dissatisfaction and neurotic difficulties.

Accepting oneself for what one really is and not for what one would like to be is a sign of mental health. The image of an ideal self inasmuch as it differs from a person's real behavior and values is one of the obstacles to human development. C. Rogers believed that in every person there is a desire to become competent, holistic, complete - the tendency to self-actualization. The foundation of his psychological ideas is the statement that development is possible and that the tendency to self-actualization is fundamental for a person.

The most important scientific discovery of K.Rogers is that he opened the necessary conditions for the humanization of any interpersonal relations, ensuring constructive personal changes. This is an invaluable positive acceptance of the other person, his or her active empathic listening and congruent (adequate, genuine, sincere) expression in communication with him or her. Humanist pedagogical practice consciously rejects targeted influences, in which manipulation of people, making it difficult for them to self-actualize, is inevitable. One cannot develop a person from outside, one cannot form humanist convictions. Only from the inside can one create the conditions in which one will come to these beliefs and choose them for oneself. The practice of humanist education is based on creating conditions that stimulate the free

development of people. That is, development carried out in accordance with their own goals and aspirations [2].

Socio-ecological concepts of mental development

The concept of mental development

W.Bronfenbrenner

Ecology of human development means scientific research of progressive mutual accommodation between an active, growing human being and changing properties of immediate conditions in which a developing person lives. This process depends on the relationships between all these conditions and the broader social contexts in which these conditions are concluded. The development of the child does not take place through the one-sided impact of the environment on the individual or vice versa, but through their constant interaction, the growth of the interacting individual into the environment. In this process of ingrowth, the ecological environment expands accordingly, presenting itself as concentric structures of micro-, meso-, exo- and macrosystems.

Anti-equilibrium theory of K.F.Rigel's mental development.

He argues that the subject of development psychology should not be equilibrium states, which are not actually encountered in human life, but a state of conflict, constant dynamics, overcoming external and internal contradictions. He is interested in how unbalanced states arise and how they are resolved. According to K.F. Rigel, conflicts arise in four dimensions: 1. intrabiological, 2. individual-psychological, 3. cultural-sociological, 4. external-physical. Insufficient synchronisation of all these planes of development is the source of crises and, as a consequence, the driving force of development. At the intersection of these planes, K.F. Rigel highlights phenomena that he interprets as negative or positively resolved crises.

The theory of personalization of A.V.Petrovsky.

Here the individual is seen as defining himself through society. The need for personalization is the starting point of development analysis. This is why A.V.Petrovsky calls his concept the theory of personalization.

A.V.Petrovskiy distinguishes three main processes that determine the course of development: adaptation as assignment of social norms and values by a person, i.e. the formation of the social-typical in a person; individualization as

discovery or assertion of the "Self", revealing one's own aptitudes and possibilities, character peculiarities, i.e. formation of individuality; integration as change of life activity of surrounding people, realization of contributions and their acceptance by surrounding people, and thus assertion of one's otherworldliness in other people, i.e. formation of the universal in a person.

The development periodization proposed by A.V.Petrovsky looks as follows. The epoch of childhood (including younger school age) is characterized by the prevalence of adaptation over individualization. The age of adolescence is characterized by the prevalence of individualization over adaptation. The epoch of youth (adolescence) is characterized by the predominance of integration over individualization [1].

Psychological concepts of self-development

In recent years, theories of self-development have been actively developed, based on the assumption that a person decides his or her own destiny - even if he or she wants it or not. There are no big developed theories in this direction yet, there are only some principles, for example, the principle of development through activity, self-construction, proposed by R.Lerner. The idea of personal control of development, the idea of critical (non-normative) life events, etc., is not the only principle. [1].

Conclusions. The analysis of the methods of determinacy described in psychological concepts of development leads to the following conclusion. Absolutely all psychological concepts of development are based on the idea of "external" determinacy of mental development. Concepts of development differ in interpretation of the nature of "external" determinants of development. From this point of view, the first group of theories in which biological conditionality of development determinants is affirmed is distinguished, which should be considered as "external" in the sense that they are not a subject of production by the developing person himself/herself, but occur in a "natural" way. The second group of theories that affirm social nature as determinants of individual development, which should also be regarded as 'external', the only difference being that they are not biologically conditioned but social, that is, also 'natural'. A third group of theories that affirm cultural nature as a determinant of development. For the same reasons, they should also be seen as "external", that is, not produced by the developing person himself, but natural. A fourth group of theories that affirm the "inner" nature as determinants of human development and, in fact, as theories of self-development do not exist at present.

1.3 Basic approaches to nature analysis determinants of individual development

1.3.1 Research paradigms

Naturalism. Paradigm of natural determinism of human psyche (inner world). Its content is the attitude "man is nature". Naturalism is defined as a system of views according to which nature itself is a single, universal principle of explanation of all that exists. In this connection, the main principle of explaining the origin of the psyche is the principle of heredity. Theoretical basis for the description of development processes in naturalistic concepts is the relation "organism - environment", and the bearer of these processes is man as a natural individual. In the naturalistic approach the human psyche has a double, simultaneously acting causal determinacy: in its qualities and manifestations it is the result of organismic, biogenetic transformations, and in its functions it is the consequence of adaptation of an individual to the natural and social environment. In this paradigm, development represents maturation and growth (maturation) that take place under the influence of heredity and environment. Naturalism in psychology sets the boundaries and methodological bases for theories of free education and requires special technologies of non-interference in the processes of mental maturation by means of pedagogy.

Sociomorphism. It is a paradigm of social determinism of the human psyche (inner world). Methodological content is the attitude "man - society". Here the human being is considered as a social individual. Its essence is enclosed not in nature, not in himself, but in society. In contrast to naturalism, in Sociomorphism natural, organic peculiarities of an individual act only as prerequisites (not sources and reasons) of development. In these very preconditions there are neither mechanisms nor driving forces of development. Sources and driving forces of development are embodied, intermediated in the opposing individual social experience, in the system of established activities. Only by appropriating this experience, a natural individual acquires the human psyche and becomes a social person. The very structure of society is the source, basis and explanatory principle of origin and structure of human psyche. The extreme expression of sociomorphism is the idea that the born individual is a tabula rasa, on which society "writes" necessary and useful for society psychological properties and features of a man.

A softer variant of sociomorphism is the provision about a leading role in the formation of the individual's psyche of different kinds of subject activity,

mastering (spreading) which he or she becomes capable of normal functioning in society. However, specific mechanisms of transformation of external social influences into internal subjective phenomena and processes have, in fact, never been and still are not disclosed. The main processes of development in the paradigm of sociomorphism have a targeted determinacy and are described by the relation "individual - social structure". The general meaning of development here is the socialization of the individual, the formation of the human inner world according to a certain socially specified norm (sample). The individual only possesses, appropriates outside of it the lying "social nature", its essential forces, which are already evident in the social structure of the world.

In full accordance with this philosophical tradition is also the traditional psychological and pedagogical practice, which provides this ideology with the necessary socialization of the individual, the technology of appropriation of social experience. This practice acts in pedagogy - in the form of formation; in psychology - in the form of interiorization (assimilation) of all types and ways of human activity, activity, behavior, needs, relations and inclinations.

Gnoseology. Is a paradigm of object determination of the human psyche (inner world). It proceeds from the position that a person's cognitive attitude to the world is initial and fundamental, determining any other relations. The cognitive point of view on the processes of psyche emergence is based on the classical methodological scheme of New Time rationalism, on the scheme of interaction between the subject of cognition and the object of cognition: S - O. Gnoseology is based on the "subject - object" relation. In this paradigm, the development of the psyche is reduced to cognitive development, the emergence and formation of cognitive structures. In this case, the initial determinants of the formation of cognitive structures are outside the human psyche.

The basic processes in gnoseology are interaction and reflection. In interaction, the structure of an object is reflected in the mental structure of the subject. In accordance with this, the mental structure of the subject is formed.

Culturalism. Paradigm of cultural determinacy of human psyche (inner world). It is an alternative to naturalism and sociomorphism. The central position is rejection of individual-biological ideas about a man, from reduction of human reality to the status of natural, social or cognizing individual separately. The main question is about the mechanisms of transformation of culture into the world the individual, and the world of the individual into forms of culture. Culturalism is based on the attitude of 'human being-culture'. The cultural point

of view on the essence of the human psyche is based on the premise that there is no direct relationship between man and nature and man and society, and that both nature and society become characteristics of the human inner world only through value and cultural-historical mediation. At the same time, the value and cultural-historical relationship cannot be intertrioritized.

Familiarization with the forms of culture is possible only with the help of a mediator (sign, word, symbol, myth, etc.). It is with their help that the transformation of natural forms of the psyche into ideal (cultural, human, in fact) forms takes place. Culturalism is based on the "man - culture" attitude, as a result of which an attempt is made to bridge the gap and contrast the external - internal, objective - subjective, biological - social, ideal - material, interiorization - exteriorization, etc. In culturalism, mental development is understood as a sign-symbolic mediation, "domestication of nature.

Anthropology (anthropocentrism). Paradigm of historical determinism of human psyche (inner world). The methodological basis of anthropology is the historical principle (development principle). The main meaning of the historical approach is that a human being should be considered in the whole variety of forms and ways of its formation: as a natural individual, as a socio-cultural subject, and as a spiritual and practical being at the same time. Man should be considered as a whole in the context of his history, in tracing the processes of origin, formation, transformation, functioning and extinction of fundamental human abilities. That is, in development.

From this point of view, development is the main value of anthropology. Therefore, the ideology of historicism is of fundamental importance when studying the patterns of development of fundamental human abilities in the time of history and space of culture (at different stages of human life). Anthropology is based on the attitude "man is the world". In the space of "man - world" the main process of formation and development of man as a culturally expedient creature capable of mastering (transforming into its own) the existing world and creating new subject forms of culture unfolds. To understand the development of a human being means to study his historical and cultural formation.

From the anthropological point of view, historically established systems of perception of human reality are, on the one hand, prerequisites for development (Nature, Socium) and, on the other hand, prerequisites for development (Culture). Within the anthropological paradigm a special class of problems arises to describe the mechanisms of transformation of natural and social

prerequisites, cultural conditions in the means of human development and self-development.

Universalism. Paradigm of self determination of the human psyche (inner world). The methodological basis of universalism is the historical and formative (universal) principle. The main meaning of the universal approach is that a human being should be considered as a self-modetermined whole, the essence of which is the history of his/her self-development.

From this point of view, self-development is the main value. That is why the ideology of universalism is of fundamental importance in studying the regularities of self-origination by a man, his new abilities in the process of culture and its history generation. From this point of view, self-determined development is the main value of universalism. Universalism is based on the reflexive inter-subjective attitude of "man to another as himself". In the interosubjective reflexive space of the "man-human being", a universal process of self-constructing a creature capable of generating the history of the culture of a being capable of generating a new subject world as a means of his own self-constructing unfolds. To understand man's self-development means to study his becoming a universal being.

From the point of view of the universal principle, historically established systems of perception of human reality are means of self-development of the universal human being (Nature, Socium, Culture, Spiritual World. Within the framework of the universal paradigm, a special task arises: to construct a mechanism of human reproduction of *natural, social* and *cultural factors* as a *means of self-development* [2].

1.3.2 Research approaches

Systemic approach *(E.G.Yudin, B.F.Lomov,*

V.A.Drummers, Z.Freud, K.Levin, A.Maslow, G.Olport, J.Piaget, N.I.Nepomnjashchaya and others.).

The technology of the system approach is aimed at objectification, at building a model of the object under study. As a result we will learn what the object is, how it is arranged, how it functions, how it is connected with other objects. But this is not enough to understand the essence of the object as such. In developmental psychology, we deal with the development of subjective reality. Therefore, a system-structural description as a steadily functioning object is not enough.

Process Dynamic Approach *(Z.Freud, A.Maslow, K.Rogers, G.Olport, K.Levin, S.L.Rubinstein, A.N.Leontiev, V.N.Myasischev, B.G.Ananiev, A.N.Prangishvili etc.).*

Explanatory and predictive possibilities of the procedural and dynamic approach are essentially limited. They are limited by its orientation to the study of human behavior in a particular situation, "here and now".

Activity Approach *(A.N.Leontiev, S.L.Rubinstein, P.Y.Galperin, A.A.Brushlinsky, D.B.Elkonin, K.A.Abulkhanova-Slavskaya, V.V.Davydov etc.).*

He did not give a principal answer to the question: what is the object of development? Demonstrated "high technologies of development", but the result of development was always relied upon or expected in advance. Neccritical use of activity methodology gave rise to technologies like "stage-by-stage formation", creating the illusion of the teacher's omnipotence, which led to the transition of activity ideology to the position of sociomorphism. The activity approach did not implement the genetic principle as the principle of deriving the desired, not postulating it.

Subjective Approach *(S.L.Rubinstein, S.D.Smirnov, A.V.Brushlinsky, B.D.Elkonin and others).*

Systemic, procedural-dynamic, activity and other object approaches to the human being will always be limited, as they do not include the activity of the subject himself into cognitive means. The subject approach is based on the equality of the subject and object of cognition. Psychological research is a form of dialogue between two sovereign subjects. For the anthropological paradigm, this position is of fundamental importance due to the fact that as the object of development and, consequently, the object of cognition, here is understood the dialogical co existential community. The idea of the human being as a subject allowed to introduce also such notions as "self-determination", "self-development", "self-education", etc., oriented to the search of internal sources of human mental development.

The man acts in his essence as a subject of mental activity, directly regulatively influencing his psyche and indirectly practically influencing the surrounding world. The Person as a subject is capable of turning his or her own life activity into the subject of practical transformation, of treating himself or herself, of evaluating the ways of activity, of controlling its course and results, and of changing its methods. In order to become a subject, a human being must

constantly transform his or her nature into a special functional organ implementing the subjective attitude to the world and transform the prerequisites and conditions of his or her life into a "second nature".

For developmental psychology, the subjective approach is of fundamental importance. Until now, most theories of human mental development in both domestic and foreign psychology gravitate to explanatory principles of either biological reality or social. At best, the ideology of double determinacy of mental development has been worked out. It is necessary to introduce into the psychology of human development the idea of self-development of subjectivity, about the ways of its internal formation and design [2].

Conclusions in the first section

The analytical essay of history and the modern state of foreign and domestic psychology of development allows to draw a conclusion that the modern psychology of development is a set of little connected directions, schools, concepts. Not all theories of development psychology are equivalent in the study of general laws of human development in ontogenesis. A number of theories are limited to the childhood period of human life (their majority), while others are oriented to the study of private issues of mental development (cognition, emotions, personality, etc.).

Special analytical reviews of the current state of the development problem (A.A.Mitkin) highlight about two dozen specific theories of mental development and set tasks to develop a system psychology of development. In this connection, there is an urgent need to build a general theory of mental development [2].

In age and pedagogical psychology, there are still many discrepancies and contradictions between different conceptions and definitions of the development category. There is a conceptual inconsistency between philosophical (first of all, Hegelian-Marxist), scientific (biological) and socio-practical (educational) interpretations of the concept of development. From the general Marxist point of view, only such totality as nature, society, civilization, and culture have the ability to develop. An individual person is not such a system and, at best, is only "drawn" into it as one of its elements. From the general biological point of view, development is, first of all, maturation and growth according to the existing biogenetic program. In pedagogical practice development is the purposeful formation of socially useful knowledge, skills and abilities, education of socially useful properties of a personality. For all

external differences of the above points of view, they have one thing in common. Such development is always non-subjective, regardless of the participants in the development process. They are just "material" on which an objective process is played out, giving this material the form of a predetermined sample.

In classical psychology, it is traditional to contrast two rows of forms and structures in human nature: "natural" and "cultural", "biological" and "social". In addition, there is a non-distinction between two specific subject contents: "mental development" (as development of the psyche) and "developmental psychology". (the development of human subjectivity, the human inner world); the "act of origin" (something that has not yet happened) and the act of development (something that already exists); the "unit of development". (as measures, as a mechanism) and the object of development (what develops) [2]. An important question for the psychology of development remains the question of the boundaries and peculiarities of the dynamics of mental development and whether it is transformed or not.

All the above mentioned problems of modern development psychology have a common basis. This basis is encapsulated in the nature of the determinants of development. From this point of view, all modern development concepts are based on the assumption of the external nature of the determinants of development. The external nature of the determinants of individual development considered in development concepts contradicts the creative essence of a human being as a being whose determinants of development have an internal nature.

It is the contradiction between the external nature of the determinants of individual development, considered as the only possible in psychological concepts of development and based on the classical (translating) educational process, and the internal nature of the determinants of self-development of a creative person is the main (strategic) in the general problem of development.

The same problem is leading for our study, which predetermined all its parameters and results.

Additional findings

Despite the fact that since the Italian Renaissance man has been regarded as the center and source of existence of a society whose purpose is to be the source of its development, psychological science (in its "western" and "eastern" versions) has not yet been able to assimilate these ideas in its concepts and

theories. This fully applies to psychological concepts and theories of mental development. The inertia of classical scientific thinking cannot overcome the barrier set by Plato and Hegel of complete dependence and subordination of the singular to the universal. But modern tendencies in human studies make it necessary to reconsider these fundamental positions of classical science and to begin to look at the human being not as a projection of the universal into a single one, but as a single universal being generating the universal by its practical and theoretical activity, which is its only source and nature. It is not social that produces the individual, but the individual is the only source of the social, that produces it. From this point of view, it is not the theories which continue to consider man as a projection of society, including those which consume social means, appropriate them and make them the means of their individual development. The strategic line of psychology development becomes the person generating, producing means of individual development and in conditions of special inter-subject communication transforming them into social means. A person should stop being a consumer of social means and culture and become the one who is destined to be a history and his or her universal nature - the producer of social means and culture.

2. SOCIAL AND CULTURAL MEDIATION AS A MECHANISM FOR ATTRIBUTING "EXTERNAL" DETERMINANTS OF DEVELOPMENT

2.1 Person as a subject of assignment of "external" determinants of development

The contradiction between the external nature determinant of "development" and the internal nature determinant of self-development is a worldview problem. Its solution is to solve the question "about the nature of man (what is man) and his place in the world" [23, p.382].

2.1.1 "External" nature of human determinants in psychological concepts

Instinct as the "external" determinant of man. Historically, the first theories of psychological determinacy were instinct theories [24, p.47]. In psychology of the late 19th century instinct was considered as the main factor that determined human behavior [25, p.462]. Later, V.McDowgall modified the model of instinctive determinacy of W.James. If W.James believed that instincts act in a reflexive way, V.McDowgall connected the orientation of his instinct with the purpose [25, p.462]. V.McDowgall also introduced the concept "motivational construct", primary in relation to the instinct [24, p.50].

If W.McDowgall explained human behavior by the presence of a limited set of instincts, then Sigmund Freud argued that the energy of all human instincts has a common source [24, p.48]. While W. James associated the determinacy of behavior with conscious decision-making, for Z. Freud and his followers the main determinant of behavior was the unconscious [26, p.52]. By his works, Z.Freud actually confirmed the biological nature of man, because he connected the unconscious with genetically determined factors [27, p.72]. According to Z.Freud, genetics equally sets the behavior of both animals and humans [27, p.72].

In this sense, instinct is a genetic program of individual behavior, formed in the process of species evolution. The individual person acts as an object of "action" of the genetically set program of behavior as an "external" factor, causing his or her individual behavior.

Stimulus as the "external" determinant of man.

As an alternative to instinctive theories of determinacy of behavior, theories of learning were created. They were based on the hypothesis that behavior can be explained by the principles of learning, not by instincts [24, p.457]. All the theories of learning saw their purpose in proving that any behavior can be explained either by the principles of classical learning or by the principles of instrumental (operational) learning [24, p.57].

According to K. Hull, drive activation (attraction) resulting from exposure to an external stimulus leads to random behaviour. As a result, the body produces a random reaction leading to a weakening of the drive. When this happens, the behaviour (reaction) that caused the drive to weaken becomes fixed. Over time, a habit is formed [24, p.57]. In contrast to Z. Freud, who believed that instincts cause notions of the target, K. Hull believed that the target is detected only in the course of random behavior [24, p.57].

B.F.Skinner, in contrast to C.Hull, suggested that there was no need to weaken the drive for learning. His research has shown that people learn, even if there hasn't been any weakening of biological drive. In that sense, B. Skinner's theory was in many ways deviating from the biological basis of behavior. In his opinion, behavior is controlled by external social reinforcements [24, p.58].

Behaviorists believed that experimental psychology, in fact, studies the needs, attractions (drives), which are purely physiological in nature. They themselves explained behaviour using a 'stimulus-response' scheme, treating stimulus as a determinant of the body's response. For behavioral determinants, the problem of psychological determinacy was reduced to studying the conditions of behavior that determine the corresponding body reactions [26, p.50]. Biologists, physiologists and psychologists-behaviorists took an external stimulus as the main determinant (for example, I.M.Sechenov wrote that the first reason for any human action lies outside it) [28, p.57].

Thus, a stimulus is an external natural (natural or social) factor that forms individual behavior (individual reactions) and is formed in the process of evolution of nature or society. The individual person acts as an object of stimulus influence as an "external" factor forming his or her behavior.

Need as an "external" determinant of man.

The scientific study of the needle determinacy of human behavior was initiated by the great thinkers of antiquity (Aristotle, Heraclitus, Democritus, Lucretius, Plato, Socrates). They characterized "need" as the teacher of life. Democritus, for example, regarded need as the main driving force. He believed that a person

could not get out of a wild state outside of need [28, p.9]. Heraclitus considered in detail the impulsive forces, attractions, needs. In his opinion, needs are determined by living conditions [28, p.9]. Socrates wrote that each person has his own needs, desires and aspirations. At the same time, the main thing is not what aspirations a person has, but what place they occupy in his life [28, p.9]. Plato's needs, desires, and passions form a "coveted" or "lower" soul, which is like a flock and requires guidance from a "reasonable and noble soul" [28, p.9]. The source of will, according to Lucrezia, are desires arising from needs [28, p.10].

The theoretical basis of the demand theories of determinacy is that energy, direction and sustainability of behavior are determined by needs. Therefore, it was suggested at one time that people are born with a limited set of needs that can be changed in the process of individual learning [24, p.51].

In psychology, the question of needs as determinants began to be discussed in the first quarter of the 20th century. At the same time, necessity as an experience of need was considered both as emotional manifestations and as instincts. The very first work specifically devoted to need as a psychological determinant seems to be the book by L. Brentano (1921). He defined need as "any negative feeling connected with the desire to eliminate it by removing the dissatisfaction that causes it" [28, p.21].

In the 20th and subsequent years of the 20th century, demand theories of determinacy begin to be created in psychology (K.Levin, G.Allport, etc.). Here, along with organic needs, secondary (psychogenic) needs arising as a result of training and education (G. Murray) are already distinguished. Such needs included the need for success, the need for affiliation and aggression, the need for independence and counteraction, the need for respect and protection, the need for domination and attention, the need to avoid failures and harmful influences, and the need for self-actualization (A.Maslow) [29, p.11].

In general, in the 20th century, the concept of "psychological determinacy" continues to be closely related to the concept of "need". At the same time, theories of need were opposed to theories of behaviorists, according to which behavior is determined within the framework of the "stimulus-reaction" scheme [28, p.11]. Among the demand theories, special attention should be paid to the works of G.Murray [27, p.77]. From the point of view of G.Murray, a need is a mental force generating an organized activity. The concept of need differs from the concept of attraction by the fact that needs do not always guide the activity in the direction of tension reduction [25, p.463].

G. Murray showed that human behaviour can be described using a limited set of needs. At the same time, he explained the individual differences by the different "power" of needs of individuals. Accepting the idea of acceptability of needs, G.Murray saw his task in understanding whether any human behaviour could be explained by a limited set of needs.

D. McClelland is one of the well-known supporters of the demand nature of human behavior determinacy. His more than forty years' contribution to this theory is the justification of the need to achieve, as well as the need for affiliation and the need for power [24, p.53].

Initially, many psychologists believed that people were born with a specific set of basic needs. These needs can be socially intensified through rewards. It was thought that the needs with which people are born are some predispositions for action and that a reward system can turn them into stable needs [24, p.54].

Subsequently, the combination of two ideas - the idea of needs and the idea of rewards - led to the idea of a social environment as a factor influencing the formation of psychological determinacy of a person. This idea was supported by psychologists who believed that learning plays a crucial role in the process of developing needs [24, p.54].

Historically, the disadvantages of theories of demand determination have led to the creation of conceptual alternatives. In the mid-20th century, great success was achieved in this respect thanks to the works of D. McClelland and D. Atkinson. Based on G. Murray's concept of the need for achievement, D. McClelland formulated a theory in his future works, highlighting three basic motives: achievement, belonging and power. From D.McClelland's point of view, motives are acquired, mainly as a result of children's experience and socialization processes [25, p.464]. As a result, it has been suggested that there are needs that are almost entirely due to the impact of the social environment. He argued that children who are rewarded for their achievements subsequently grow up with a strongly developed motivation for achievement [24, p.55].

A similar approach to the motives for achievement was proposed by D. Atkinson, who added two essential points to the theory of psychological determinacy. First, having analyzed the works of his predecessors (K.Levin, E.Tolman), he created the concept of expectation of significance. In other words, a person acts when he or she expects to succeed in achieving the goals he or she perceives as subjectively significant. Thus, D.Atkinson introduced into psychology the concept of subjective evaluation, replacing with it the

concept of objective possibilities and benefits. Unlike theories of attraction, his model of expectation of significance reflected such properties of human motivation as purposefulness and orientation to the future. Secondly, D. Atkinson admitted that action usually reflects a reasonable compromise between positive and negative stimuli and expectations. Risk entails success or failure [25, p.465].

Classical theories of "expectation-significance" have been found to suffer from a flaw that becomes more and more obvious as psychology develops. D.Atkinson's theory and other theories of "expectation-significance" of his epoch (for example, H.Heckhausen's theory) were cognitive in the sense that they analyzed subjective notions and dynamic mental processes. But, as a rule, they did not pay attention to specific mechanisms of information processing, by means of which expectations are formed and modified [25, p.467].

A disadvantage of theories of "expectation-significance" can be considered that they emphasize the importance of expectations in relation to the environment and relatively little attention is paid to human perceptions of his own "Self". A person's expectations of possible events depend to a large extent on his or her perception of whether he or she is capable of achieving results worthy of encouragement. Modern approaches to psychological determinism place great emphasis on perceptions of the "Self" [25, p.467].

In further examination of needs as determinants of behaviour, the question arose as to whether a limited set of basic needs (dispositions) is at the root of all the many different needs. The answer to this question has been tried by using factor analysis. As a result, R. Kettell proposed a well-known sixteen-factor model. After him, G.Iisenk proposed a three-factor model. Comparatively recently (1992) a five-factor model was developed [24, p.55].

Currently, available data suggest that advocates of deterministic demand theories argue that any human behaviour can be described through 5-7 basic needs (or dispositions) and that each need can be correlated with its corresponding biological structures [24, p.56].

The need for self-actualization as an "external" determinant of human beings

Humanist psychology emerged as an alternative to behavioral and behavioural psychology and had a clear anti-Darwinian character. From the point of view of humanistic psychology, man is biologically determined and possesses innate, revealing potentials in the processes of maturation. In this regard,

humanistic psychology denies the decisive role of traditional biological determinants of human behavior and asserts the need for value self-actualization [27, p.130].

Nevertheless, as the main source of psychological determinacy of human existence, humanist psychologists recognize the natural nature of man and base their theories on the assumption that good is genetically embedded in people and that they have an innate (biological) desire for growth and improvement [24, p.64].

The whole system of needs as an "external" determinant of human existence

An attempt to describe human determinants not as single factors but as some kind of integrity is Kurt Levin's known field theory [27, p.225]. The peculiarity of the field model of determinacy is, firstly, its topicality ("here and now"); secondly, its homeostaticity expressing the idea of adaptability [27, p.227]. The lack of clarity of the mechanisms of psychological determinacy in K.Levin's field theory allows us to speak about it as descriptive [27, p.239]. Besides, the absence of the possibility to predict human behavior arising from its theoretical basis leads to the fact that the whole theory is reduced to a statement of fact [27, p.240].

In general, necessity is a natural (natural or social) factor that gives energy, direction and stability to human behavior, itself formed in the process of biological or social evolution. The individual person acts as an object of need impact as an "external" factor that determines his or her own behavior.

Cognitive image as the "external" determinant of man.

The theoretical foundations of cognitive theories were laid down in the work of psychologists who worked on the problem of learning (Edward Tolman), psychologists who worked on the problem of personality (Kurt Levin) and psychologists who worked on development (Jean Piaget).

Although traditional theorists (John Watson, Clark Hull) believed that any behavior could be explained through the principle of strengthening habits or associations without resorting to the idea of images, the view that mental (cognitive) images play a central role in determining behavior eventually prevailed [24, p.66]. Already at the end of the 19th century, W.James singled out several types of decision making (formation of intention, aspiration to action) as conscious deliberate action. He called the objects of thought delaying the final action or favoring it the grounds or motivations of this

decision [26, p.51].

Later, in the second half of the 20th century there appeared motivational concepts of J. Rottor, H. Kelly, H. Heckhausen, J. Atkinson, D. McClelland, which were characterized by recognition of the leading role of consciousness in the determinacy of human behavior. The so-called cognitive theories of motivation, entailed the introduction of new concepts: social needs, cognitive dissonance, values, waiting for success, fear of failure, the level of claims [26, p.51] [28, p.12].

The basis of cognitive theories is the idea that people can form mental images that reflect their environment and use them to control their own behavior [24, p.69]. Their specificity is that they do not focus only on environmental change. It is believed that it is impossible to change the external environment. The best way out of this situation is to change their views and perceptions about the world around them. This idea is not new, it was expressed many centuries ago by the Roman Emperor Marcus Aurelius: "If something hurts you, then its source is not from the outside, but from the way you look at it. And you can reconsider your views right now" [24, p.109].

Almost all cognitive theories are based on the statement that the development of cognitive structures is associated with psychological determinacy. At the same time, determinacy is interpreted as a discrepancy between what one is able to understand at the moment and what one needs to understand in order to understand changes in the world around him. According to cognitive theories, what one sees or feels depends largely on one's beliefs, attitudes, values and implicit theories.

Cognitive attribution theory. The way people explain their past successes and failures has a significant impact on the nature of their future psychological determinants. By analyzing the mechanisms of the influence of attribution processes on determinant processes, *Wiener* considers subjective judgments about the causes of certain actions as an incentive force. The results encourage the search for the causes. Judgments about the causes of events determine the character of psychological determinants [25, p.468]. One of the serious drawbacks of the theory of attribution is the emphasis on retrospective judgments, as opposed to human goals and thoughts about the future. *Dessie* argues that this feature makes the theory of attribution "more similar to the theory of attraction than to cognitive theories of motivation" [25, p.468]. [25, c.469].

Cognitive probability estimation theories. The idea that people form mental images emerged in the 50s of the 20th century. One of the kinds of mental images is waiting (probability). In other words, judgment based on past experience and allowing to estimate the probability that certain actions will lead to certain results. Waiting in itself is not a determinative factor. But it does form a combination with a deterministic factor - evaluation. Estimation theories are based on the assumption that people not only form expectations about what can happen if they do something, but also estimate the probability of the development of events [24, p.67]. Theories of probability estimation are inherently hedonistic. They are also called cognitive choice theories or decision making theories [24, p.68].

Cognitive control theory. Cybernetic theory (the theory of control) of self-regulation model is an integral system within which it is possible to consider processes of psychological determinants formation. In control theories the main attention is paid not to retrospective judgments of an individual about the causes of events, but to information-procedural mechanisms through which a person regulates his actions. The theory of control similarities self-regulation to the functioning of some feedback system, similar to a thermostat [25, p.469].

Socio-Cognitive Theory of Self-Determination. According to this theory, a person has needs for competence, autonomy and connection with other people. Autonomy promotes internally motivated behaviour. If such behaviour is violated by external rewards, internal motivation weakens or disappears altogether. In order to stimulate motivation, the person needs to be given the freedom of action as well as to encourage the internalisation of the group's values. People who are oriented towards success are distinguished by a sense of subjectivity (*Bandura*). G. Murray, who initiated the research on motivation of achievement, defined the need for achievement as a desire or tendency "to overcome obstacles, to show strength, to strive to do something difficult or to do something as quickly as possible" [24, p.581].

In R. White's opinion, the tendency towards research behavior is due to a generalized motive (efficiency motivation). This motive is aimed at understanding the essence of the surrounding world and world order. The sense of effectiveness arises when a person realizes his or her ability to influence the world around him or her [24, p.581].

Many researchers believe that the transformation of a targeted command into an automated command is necessary. But a number of alternative studies have shown that it is necessary to live consciously. Living consciously takes time

and effort, but this additional effort is more than paying off. A successful life is a conscious life [24, p.623].

The subject side of the "I" is autonomous and requires control. If it is allowed to develop skills and competence by mastering the world around it, the person has a sense of self determination. The subject side is responsible for active integration of information (not its absorption), as well as for generating rules and principles that govern our actions [24, p.627]. Most modern motivation theorists believe that in order to succeed, it is necessary to focus on the process rather than on the goal. Many authors writing about motivation argue that the main satisfaction in achieving a goal is not in finding the goal itself, but in working towards it [24, p.640].

Reflexion is generated by curiosity or a desire to understand oneself. This leads to personal growth and creativity. People who are absorbed in activity and live passionately are more likely to be attracted to reflexion. Research suggests that in order to strengthen reflection and to weaken rumination, one must focus on activity. In this case, not only does reflexion become stronger, but also obsessive negative thoughts weaken [24, p.641].

Social-cognitive theory of A. Bandura's motivation. The two main postulates of social and cognitive theory are as follows: 1. personal functioning implies conjugate interaction of personality, behavior and socio-cultural environment; 2. a person is able to influence his or her own life. In other words, his cognitive capabilities allow him to guide his development [25, p.521].

This theory is the most holistic concept of socio-cognitive mechanisms and self-regulation. According to sociocognitive theory, motivational tendencies are explained mainly in terms of human capacity for foresight. Man's behaviour in the "here-and-now" situation depends on his ideas about the future. Expectations for results imply an assessment of the consequences of one's actions.

Perception of one's own effectiveness is a person's idea of whether or not he or she will be able to perform the necessary actions at all. Goals and standards represent the third cognitive determinant of motivation. Finally, emotional self-response is the fourth personal factor. A person motivates himself or herself by criticizing his or her past actions and by feeling self-satisfied while improving the results [25, p.472].

Socio-Cognitive Theory of Cognitive Evaluation. According to this theory, interest in solving a task is facilitated by its difficulty and the feeling of one's

own competence. This approach differs from sociocognitive theory mainly in that it considers the sense of self determination as the basic human need. In contrast to this understanding, in sociocognitive theory, perceived self-efficacy is not a motive or need, but a cognitive evaluation. A person does not aspire to precise or high scores of self-efficacy for their own sake. He or she acts in order to receive an external award or to achieve a sense of pride in his or her performance. And evaluation of one's own effectiveness is a mechanism for regulating efforts to achieve these goals. Thus, perceived self-efficacy is a system of perceptions that regulates efforts to achieve certain goals [25, p.472].

Social-cognitive theory of planned behavior. According to this theory, behavioral intentions are determined by three factors: a person's attitude towards a certain behavior; his perception of the social necessity to behave or not to behave in a certain way; and perceived behavioral control, defined as a person's perception of how difficult or easy it is for him to behave in a certain way. Planned behaviour theory also acknowledges that the perception of control can have a direct impact on behaviour. That is, influence not mediated by behavioral intentions [25, p.473].

Socio-Cognitive Theory of Goal Setting. Some theorists believe that people can motivate themselves by setting goals for the future. It has been found that it is possible to increase motivation to achieve goals by allowing a person to set his or her own goals [25, p.469]. A number of critical remarks were made about A.Bandura's sociocognitive theory and close to it concepts of goal setting. The first one. Some believe that this approach reflects the mechanisms through which an individual manages his or her actions, but is unable to answer the question "why results or goals have motivational power", or to answer questions about, so to speak, "energetic behavior". According to this notion, it is necessary to postulate a certain system of basic needs that provide energetically for actions, such as the need for competence and autonomy [25, p.473]. The second. Social and cognitive theory overestimates the importance in self-regulation of rational, self-reflective processes. Although A.Bandura and some other representatives of sociocognitive direction recognize that cognitive processes can be automated and take place outside of consciousness, some data testify that external factors can influence behavior through unconscious mental mechanisms, which have not been clearly explained in sociocognitive theory [25, p.474].

Information as an "external" determinant of man.

The main idea of social science is that people can learn by modeling

(observing) the behavior of others rather than by external rewards [24, p.60].

Theories of social learning differ from those of B. Skinner and C. Hull in two features: 1. behavior is seen as independent of the influence of random environmental factors; 2. the body can acquire experience (habits) even in the absence of direct experience or reward. Information is considered the determinant cause of behavior in the theory of social learning. Moreover, human behaviour is determined by information that a person "registers" involuntarily [24, p.61].

B. Skinner and C. Hull were the most influential supporters of behaviorism. But while Hull argued that biological urges determine human behavior, B. Skinner rejected the idea that the main determinants of the command are biological factors. The deep meaning of the theory of social learning was that a person could change the forms of his or her behavior. But that doesn't mean at all that a person can change their own reactions to stimuli. The assumption underlying all behavioral theories is that learning is essentially passive, involuntary [24, p.61].

In terms of theories of psychological determinacy discussed, all people are driven by the urges, needs, instincts and conflicts that come from childhood. This means that we do not do what we want to do, but what we have learned [24, p.62].

Theories of growth motivation and mastery

Theories of growth motivation are based on the idea that people are motivated by the need to interact successfully with the environment. The meaning of the basic position of growth theories is that people are not born with advanced abilities. Successful adaptation and adaptation require these abilities to be developed. In all growth theories, the idea that people need to process information and acquire skills is embedded. In other words, to develop skills [24, p.62]. Growth theories describe the mechanism of psychological determinacy as a discrepancy between where an individual is at the moment and where he or she needs to be in order to adapt to the environment successfully. This discrepancy creates internal tension. To reduce this tension, it is necessary to reduce the existing divergence by developing skills and intellectual abilities [24, p.62].

Here tension is a determinant factor, expressing the idea that a negative affective state is directly related to a divergence resembling an unpleasant feeling of hunger or thirst. It is this divergence that determines human actions

or actions. Since tension is related to the lack of necessary information, Jean Piaget believes that cognitive structures should be developed that can handle large volumes of information [24, p.62].

Theories of motivation for growth and mastery were an alternative to theories of learning, which claimed that all behavior was learned. But growth theories were based on another basic assumption: people have a biological predisposition to successfully interact with their social environment. This assumption is quite consistent with the evolutionary approach, the essence of which is that our adaptive capacities do not depend on the will of chance but are conditioned by our biological characteristics [24, p.65].

The concepts of "internal" determinacy. These concepts are of particular interest because a purely instrumental understanding, which ultimately reduces behaviour only to servicing an organism that is forced to restore disturbed homeostasis, has always been objectionable, especially when the data obtained from work with animals were entirely transferred to humans [27, p.717]. The second attack, directed against the extrinsic understanding of behavior, followed in the 50s. The second attack against the extrinsic understanding of behavior followed in the 50s of the 20th century, when, thanks to the works of K.Hall and B.Skinner, the explanation of behavior exclusively by external reinforcements reached its peak [27, p.718].

There are many problems in the psychology of motivation, including the fact that there is still no unanimity of views on the difference between internally and externally motivated behaviour. At least six different concepts can be identified. What is common to all of them is only an understanding of internally motivated behavior as being committed for the sake of oneself or for the sake of closely related target states, and not simply as a means of achieving a goal alien to such behavior [27, p.718].

1. Caution without reducing the attraction. This concept argues that internally motivated behaviour does not address physiological needs such as hunger, thirst or avoidance of pain. At the same time, additional attractions (research, manipulative, etc.) are postulated that are not subject to the principle of restoration of disturbed homeostasis by the body [27, p.718].

2. Freedom from target. Considered as internally motivated any seemingly aimless activity, without postulating the inherent attractions or motives for this activity alone [27, p.719]. Fundamental to this kind of activity is considered to be "motivation effectiveness". At the same time, a feeling of efficiency is

motivating, and the result of activity is the expansion of different kinds of competence [27, p.719].

3. **Optimal activation or mismatch level**. According to this concept, a behavior is considered internally motivated when there is a regulation aimed at maintaining or restoring some optimal level of functioning [27, p.719].

4. **Self-affirmation.** Presented in the works of de Charms. He sees the primary motivation to feel effective, to feel the source of change in the world around him. This desire to be the reason for his own actions is not a specific motive, but a guiding principle that applies to different motives [27, p. 720].

5. **Joyful absorption of action.** Here, the significance of such a criterion as an accompanying action experience, connected not with the Self (as subjective causality), but with action, becomes even more important. Internal motivation means in this case that the person is joyfully given to the case, that he is completely immersed in the experience of the action moving forward. In his work "On the Other Side of Boredom and Anxiety," Chiksentmihali suggested a certain emotional state as a characteristic of internal motivation - joy of activity [27, p.722].

6. **The uniformity of the action and its purpose. It** raises the question of whether and to what extent the substantive and inherent relationship between the action and its purpose, or basis, is reflected in the subject's experience. Thus, it raises the question of the self-attribution of motivation. Action is internally motivated when the means (action) and the purpose (goal) of the action are thematically related; in other words, when the goal is thematically homogeneous with the action, so that the latter is carried out for the sake of its own content. In particular, an action of an achievement will be internally motivated if it is undertaken only for the sake of the result to be achieved, since a task or an assessment of one's own capacities will be carried out in this way [27, p.722].

Summarizing the above, we can say that the cognitive image is an information factor, acting as a means of necessary change in their own behavior caused by a change in the external environment. Cognitive image is formed involuntarily in the process of human interaction with the external environment. The individual person acts as an object of influence of external natural or social environment, mediated by cognitive image as an "external" factor that determines his or her own behavior.

The need as an "external" determinant of man in former Soviet concepts

In former Soviet philosophy, psychology and sociology, the problem of psychological determinacy was addressed by many researchers. But even the most famous of them only outlined a range of phenomena that, in their opinion, should be the subject of research: S.L. Rubinstein (needs, interests, ideals), A.N. Leontiev (subject of need, material or ideal), D.N. Uznadze (attitude), I.S. Kon, I.Ya.V.Simonov (needs, attraction on the basis of specific morphophysiological substrate), P.K.Anokhin (functional needs on the basis of hormonal and metabolic processes), V.N.Myasischev (higher social needs as interoriented social relations) [26, p.49].].

Among the Soviet psychologists of the early 20th century, who raised questions of the determinacy of human existence, we should first of all mention A.F.Lazursky, who published a book in 1906: "Essay of the science of characters. It discussed issues related to desires and urges, the struggle of motives and decision-making, the stability of decisions (intentions) and the ability to internally delay the stimuli [26, p.53] [28, p.13].

Attractions, desires and "desires" of a person, in connection with questions about will and volitional acts, was discussed in his works by a major Russian psychologist N.N.Lange. In particular, he offered his understanding of the difference between attractions and "desires", believing that the latter are the attractions that pass into active actions. From N.N.Lange's point of view, hottenseness is an active will [26, p.53] [28, p.13].

In the 20s of the 20th century and later, V.M.Borovskii and N.Yu. Voitonis [28, p.13] considered the questions of natural nature of behavior determinants.

L.S.Vygotsky also considered the problem of human behavior determinacy in his works. In the textbook "Teenager Pedology". [29] he paid much attention to the nature of interests and the dynamics of their change in adolescence. L.S.Vygotsky believed that the problem of the correlation of attraction and interests is the key to understanding the mental development of a teenager, which is caused, first of all, by the evolution of interests of the child's behavior, change in the structure of the direction of his behavior. In his other work [14], L.S.Vygotsky paid much attention to the question of "struggle of motives". One of the first domestic psychologists, he began to separate motive and stimulus and began to speak about arbitrary motivation [26, p.54].

Systematic experimental study of needs and motives was started in domestic psychology by A.N.Leontiev and his students. In the thirties of the 20th century it was carried out in Kharkov, and then continued in Moscow [30, p.146]. In

A.N.Leontiev's opinion, which for many years defined the attitude of many domestic psychologists to the problem of motivation, motive is a subject that serves as a means of satisfaction of needs. At the same need, motives of the observed behavior can be different subjects. The dynamics of a need leads to its deforming and appearance of a motive [26, p.58].

L.I.Bozhovich put forward the hypothesis that the integral structure of the personality is determined, first of all, by its orientation. According to her point of view, the person's orientation is based on the steadily dominating system of motives arising in the process of life and upbringing of a man, in which the main leading motives, subordinating everything else, characterize the structure of the man's motivational sphere. The emergence of such a hierarchical system of motives ensures the highest stability of the individual [26, p.61].

As a result of her numerous psychological studies, it became clear that the motivation for action always comes from a need, and the object that serves her satisfaction only determines the nature and direction of the activity. Therefore, changing the objects in which needs are embodied does not constitute the content of the development of needs, but is only an indicator of this development. And the psychological content of the needs development process has yet to be studied and revealed [30, p.155].

In the 40s of the 20th century, D.N.Uznadze considered psychological determinacy from the position of "the theory of installation", who also believed that the source of activity is a need [28, p.13].

V.N.Myasischev pointed out that the concept of a motive has two meanings: firstly, the motive driving force of behavior or experience, and secondly, the basis of an act, decision, opinion. He saw the origin of psychological determinacy in the socialization of the individual and the interiorization of social relations [26, p.58].

But not all psychologists recognized the need as the initial basis for psychological determinacy. One of the first in 1956, on the pages of the journal "Questions of Psychology", spoke against A.V.Vedenov. He sharply criticized the psychologists who connected the problem of human consciousness activity with the problem of needs, and suggested that all determinants of human behavior should not be put in dependence on needs [30, p.139]. As a result of the following scientific discussions, it was established that in A.N.Leontiev's concept, including, as well as in the positions of many other psychologists, the actual psychological process of development of needs was put out in brackets

[30, p.140].

As a result, many psychological questions remain open: why the goals consciously set by a man, in some cases, carry out the inducement function, and in others - not; how, by virtue of what mental mechanisms a man can act contrary to his direct motives, but in accordance with consciously accepted intention; what is psychologically the will, etc. The lack of an answer to all these specific psychological problems is explained by the fact that to date the question of the genesis of specific human determinants of behavior remains unsolved [30, p.143].

Along with A.N.Leontiev's position on the dynamics of need and its transformation into a motive, another point of view is that need directly encourages the individual to be active in meeting this need. It is, therefore, an internal stimulus to his behaviour and activity. The need cannot in any way be equated with the existence of an objectively existing need. A need that is not reflected in the experience does not become an incentive for behaviour. Nevertheless, necessity is at the heart of all other stimuli for behaviour, including the highest ones that are specific to the individual [30, p.170].

Already nowadays in modern psychological researches of Novosibirsk State Pedagogical Institute (Yu.A.Sharov) the question about sources of human consciousness activity and about correlation of material and spiritual needs of a person is raised again.

In his article he comes to the conclusion that the problem of birth of ideal personal motives is still completely unclear and requires the most serious research. Yu.A.Sharov refers to biologists all psychologists who have tried to understand the emergence of higher spiritual needs of a person from a qualitative transformation of more elementary, primary needs [30, p.144].

According to B.F.Lomov's point of view, **a** motive is a component of the motivational sphere of a personality, which is understood as the whole set of motives formed and developing during the life of a given individual. This sphere can change under the influence of life situations, but, at the same time, some motifs are quite stable and form the "core" of the motivational sphere, manifesting itself in the direction of the personality [26, p.58].

V.S.Merlin proposed a classification of motifs, which in terms of their content largely coincide with the category of "motivation". All motifs are divided into two groups: the first group includes those common to humans and animals, they are hereditary. The second group contains specifically human motifs [26,

p.61].

Psychologists who share a biological view of the nature of the basic human determinants, believe that the strength of the motive is determined by the intensity of the motivational excitation, which, in turn, depends, as noted KV Sudakov, from the hypothalamus, coming into a state of excitation from a lack of some substances in the body. Hypothalamic-reticular centers have an ascending effect on the cortex. Thus, the hypothalamus acts as a generator of energy necessary for the formation of excitation [28, p.135].

Based on the works of L.S.Vygotsky, V.K.Vilyunas suggests considering the way of development of human motivation itself as a motivational mediating [31, p.65]. It means that the formation of new motivational relations occurs as a result of attempts to connect the phenomena to which these relations are developed with other phenomena that already cause such an attitude, i.e. by means of motivational mediating [31, p.73].

Like L.I.Bozhovich, V.K.Vilyunas is critical of the mechanism of needs assessment. He offers his mechanism of dynamics of need and its transformation into a motive. He believes that if a need is actualized in the absence of an object corresponding to it, a specific state of motivation is formed, which represents a potential readiness for active reaction in the event of its appearance. When such an object appears, an emotional attitude emerges to it, which, in fact, opens up the subject's needy significance of the object (in the form of positive or negative direct evaluation) and prompts him to direct his activity (in the form of desire, attraction, etc.). The relationship between motivation and emotions expresses the definition of emotions as a subjective form of existence (manifestation) of motivation [31, p.7].

Some psychologists studying target forms of human behavior determinants directly note that the goals of human actions and processes of their formation have a biological background (O.K.Tikhomirov and T.G.Bogdanova) [28, p.15].

V.E.Milman's researches take a special place. In his opinion, there are two types of determinants in the structure of personality: productive and consumer. Productive determinacy (in the form of values) determines the creative development of the individual and promotes the inclusion of man in society. This type of values orients a person towards the future, and they are the preconditions for substantive substantive development of both an individual and society as a whole. Productive determinacy, based on its essence, is

creative as it promotes the emergence of socially significant material and spiritual values. Consumption determinacy is aimed at maintaining the vital activity of the subject and is conditioned by his natural needs [26, p.55].

A.M.Matyushkin, when he speaks about the situational cognitive need, notes that it is born when in the course of achieving the set task there is a violation of the established stereotypes of activity. New conditions give rise to cognitive need (how to reach the goal) and cause search activity aimed at not finding the unknown, which acts as a new and initially unknown goal of cognitive need. This means that when one starts activity, one does not know yet what he will find or what he will choose [28, p.78].

Recently, in post-Soviet psychology, the concept of need has undergone fundamental changes. Remaining the basic determinant, the need has practically lost its original biological and social nature and has taken completely different forms. Thus, for example, from the philosophical point of view, the essence of necessity consists, on the one hand, in the absence of good (V.S.Magun) **and, on the** other hand, in the relationship between the individual and the surrounding world (D.A.Leontiev) [28, p.21].

From D.A.Leontiev's point of view, the need is an objective relationship between the subject and the world. He believes that today's generally accepted understanding of need as originating from need carries the residual content of the biologized predecessors of this notion (instinct, attraction), which raises a number of problems in understanding its essence and role.

From his point of view, there is a limit beyond which one cannot penetrate without changing one's views. It is necessary, he believes, to rise from the psychological to philosophical level, from the position of a needy consumer to move to the position of an outside observer. D.A.Leontief believes that the need should be defined through the forms of activity in which it is realized, and considered as a need for activity, not in subjects [28, p.30].

Thus, in post-Soviet psychology, the "necessity" view of human nature continues to prevail. With the exception of some psychologists (A.R.Luria, A.V.Vedenov, Y.A.Sharov, and some others), the post-Soviet psychology of motivation exists within the framework of the developed in the 30s human consumption paradigm.

The various theoretical shades that distinguish individual psychologists do not affect the belief of most of them in the strategic importance of needs research as basic determinants. Even the most modern concepts testify only to the fact

that the needs paradigm has many more adherents. Modern analysts note that, despite all the differences, the majority of psychologists have a similarity in that almost everyone recognizes the function of inducing human activity (behavior, activity) behind the need [28, p.21]. There is still an opinion that the unconditional root cause of activity and actions is need [28, p.78].

2.1.2 Social past-mediated nature of the assigning person

Nowadays, it is possible to speak about two alternative worldview positions represented in modern psychology, which divide all psychological concepts into two types.

The first type of concepts is based on the natural science picture of the world, which is a system of interacting components. In this picture of the world, a human being is one of the components of the world specifically included in the chain of cause-effect interactions. In such a picture of the world the whole is the results of interaction and represents the components of nature (the subject world) connected with each other by interaction processes.

The social world is a system of special (social) components subject to the general laws of cause-effect interaction. An individual as an intermediate link is included in the "gap" between cause and effect, and his or her consciousness and action gives initially spontaneous cause-effect interaction awareness and predictability.

The starting point for the emergence of an individual person and his or her psyche is an external (social) influence, as a result of which his or her internal social nature is discovered and included in the processes of formation. The meaning of existence of the social reflexive man is to be the ontological center of the world, to reflect and express the essence of the whole subject world and, as a result, to turn spontaneous and natural processes of the natural world into conscious and controlled processes of the social world.

The second type of concepts is based on the cultural-historical picture of the world, which is a system of components that are produced (deduced) from a single source and have a common nature and foundation. In this picture of the world, the human being is a specific source of production (origin) of the world, acting on the basis of a targeted determinacy.

In such a picture of the world, the whole is the initial (initial) moment of human activity and represents the specific components of human nature (the human subject world) derived from a common basis, generated by one source. The

cultural-historical world is an integral system of special (cultural-historical) components that occur on the basis of the general law from the initial common basis. A human being as an intermediate link is included in the "gap" between the ideal and real forms of the subject world of culture and his consciousness and action reproduces himself and reproduces the subject world of culture.

The origin of the individual person and his or her psyche is the external social attitude, as a result of which his or her internal cultural-historical nature arises (is produced) in the process of cultural development. The meaning of cultural-historical man's existence is the reproduction (reconstruction) of the subject world of culture at the expense of transformation of the ideal form of culture into its subject reality, expanding the sphere of cultural reality at the expense of transformation of natural subject into cultural one.

All modern psychological concepts to a certain extent express (reflect) these two polar worldviews and concretize them to a certain extent. For foreign psychological concepts, the most characteristic is the natural-scientific world outlook, while the domestic psychology of both world outlook positions are equally characteristic.

Traditionally, foreign psychological concepts pay more attention to psychological phenomenology, and less attention to the analysis of mental mechanisms. Unlike them, the domestic psychology is characterized by search of fundamental mechanisms as ways to deduce on their basis all psychological phenomenology. This concerns both the reflexive paradigm of psyche, most fully and in details developed in the social and reflexive concept of psyche (S.L.Rubinstein), and the cultural paradigm of psyche, most fully and in details developed in the cultural and historical concept of psyche (L.S.Vygotsky). We believe that the analysis of these two fundamental human paradigms is most productive on the two main domestic psychological concepts, the degree of fundamentality and specificity of the development of which allows the most complete analysis.

It is traditional for domestic psychological concepts to consider the social nature of man as an initial postulate [32, p.251]. The methodological basis of domestic concepts till now is K.Marx's thesis about a social nature of the person that corresponded earlier in the obvious image (and nowadays it corresponds implicitly) with understanding of essence of the person as a set of social relations [33, p.201] [34, p.32].

This provision is most detailed and concretely represented by two leading and

most famous, fundamentally developed and representing diametrically opposite views on the nature of man and his psyche of domestic concepts. These are the social and reflexive concept of S.L.Rubinstein's psyche (I.M.Sechenov, V.M.Bekhterev, K.A.Abulkhanova-Slavskaya, A.V.Brushlinsky, A.M.Matyushkin and others).) and cultural-historical concept of L.S.Vygotsky's psyche (A.R.Luria, A.N.Leontiev, L.I.Bozhovich, A.V.Zaporozhets, P.Y.Galperin, M.I.Lisina, D.B.Elkonin, V.V.Davydov, etc.).

2.2 Intermediation by "internal conditions" as a mechanism for assigning social causes

2.2.1 Social nature of the cause and mediated person

The initial methodological position of the subject-activity concept of ontogenesis of the human psyche is the Marxist position on the social nature of man. The position of S.L.Rubinstein as a psychologist in a question about a social essence of the person and about a social nature of the determinants of the individual person consists in transfer of an accent from culture, from society in general on concrete society, literally, on concrete collective, on concrete community of people as the direct factor of social determinacy. From the point of view of the social and reflexive concept, an individual in the process of his or her individual development is formed not in a universal cultural and historical situation "everywhere and always", but in a concrete social situation "here and now" [22, p.52].

In terms of the reflexive concept, social determinacy is not only external but also internal. This position follows from the position about social nature of the individual person, as all basic parameters of individual vital activity are essentially defined by the type of social relations. All mechanisms and ways of inclusion of an individual into society, his or her connections with other people, his or her needs and inducements are socially determined. Social determinacy at an individual level also has essential character, as driving forces of life and behavior of people are social reasons [35, p.45]. With respect to the human being, both external and internal are initially inseparable natural and social interconnections (S.L.Rubinstein) [22, p.86].

Social determinacy of individual way of existence is not an external condition to which a person adapts. The fact that the social way of being is inherent to an individual is achieved not by the mechanism of interiorization, but by the action of the mechanism of social necessity, which is a social way of inducing

the individual to social activity [66, p.223].

At the psychological level, the internal nature of social determinacy is expressed in the ontological nature of human consciousness, which is manifested in the phenomenon of experience. Since any experience (as a phenomenon of consciousness) is the evidence not only of being, which is its object, but also of the subject itself, as long as consciousness reflects the existence of the object and expresses the subject's life in its relation to the object (S.L. Rubinstein). S.L.Rubinstein calls this second component of consciousness (attitude) "practical" consciousness. This means that the social determinacy of consciousness does not come from "outside", but "inside", from the very social mode of being of man as a subject [36, p.223].

From the point of view of the social reflexive concept, the human being and his psyche should be considered as a derivative of concrete social (not universal) forms of social being [36, p.248]. The social nature of the psyche is associated with the social conditionality of the natural, natural reflexive activity of the brain and is expressed in the presence of the second signal system interacting with the first [36, p.65]. In the historical process of the development of joint activity of people, the social mediates, changes and develops the natural in a person and, at the same time, is mediated by it [22, p.175].

Social is a way of development of the natural in man, not as antithetical to natural quality [37, p.138]. Ways of action are worked out by all mankind and mastered by man in the process of communication, training and education. These socially developed ways of action are included in the natural abilities of an individual as they are stereotyped and turn into a generalized system of reflex links fixed in the brain. Thus, the very natural abilities of man act as a product of social development [38, p.196].

From this point of view, social conditionality of thinking is expressed in the fact that the development of an individual is carried out in the process of learning the knowledge developed by mankind in the process of social and historical development [39, p.244].

The social nature of man is expressed in the fact that the inner world of man is a transformed external (social) influence of his originally inner (natural) nature [36, p.65]. Therefore, the human being is a natural being acting in a social way [11, p.293].

Since social (external) determinacy is provided by the attitude "a person is a

concrete social structure" [35, p.39], insofar as the real existence of a person is fully determined by his or her social role, depends on the nature of the social relations in which he or she is included [34, p.639].

Thus, the social nature, from the point of view of the social-reflexive concept, consists in the direct dependence of a person on the concrete emerging social structure and on his role in this social structure. It means that an individual is an "individual organ" of social (public) life [35, p.49]. A person is defined, assigned, determined by social relations [35, p.35] in the sense that it turns out to be conditioned by the (assigned) place in society that he occupies, by the social role that he plays [35, p.49].

The social assignment of a person to his or her specific social status means that the individual life is initially a social life, but taken on an individual scale [35, p.36]. It is a projection of social life on individual conditions. Therefore, an individual person is a person whose all possibilities, including the content of individual consciousness, are defined and defined by his or her position in social relations [35, p.49].

In the social and reflexive concept, the social nature of man acts as his social limit [35, p.49]. In this sense, a person's position in social relations, considered as a criterion of his or her creative possibilities, is a means of restraining his or her own development and the development of the whole society.

Ultimately, the inner subjectivity of a person is determined by objective sociality [35, p.50]. As such an objective determinant, social nature serves as a source of individualization of a person, which can be realized only as a result of spreading and appropriation of social essence [37, p.117]. Thus, based on the social nature of an individual, any limits are determined and set not by the individual himself, but by a specific type of social relations [37, p.129].

The social nature of man implies the need to include him in society. But the way a person is included in society is objective. In other words, it does not depend on the individual himself, but depends on his place in the system of social relations [40, p.192]. This leads to the fact that individual consciousness is defined and determined by the peculiarities of the social structure into which a person is directly included [41, p.199].

Social relations identified in the social-reflexive concept with the social nature of a person have an objective, i.e. they are independent of the human consciousness and therefore "external" in relation to it. That is, they are not regulated and produced by an individual person [40, p.191].

The peculiarity of understanding the social nature of man in the social reflexive concept is that the determinants of his existence are not universal forms of social being (culture), but specific forms of social being [40, p.248]. At the same time, social determinacy is considered not only as an initial "external" one, but at the same time as an "internal" one [40, p.223], as a determinant of "inside" being and consciousness of a human individual [40, p.223].

At the same time, being both "external" and "internal", social determinacy remains only "external" by mode of origin. In other words, it is not produced by the individual himself, but only experienced its action as the object of social determinacy.

Therefore, a person is only a participant of social processes, social activity, etc., who, in principle, is unable to cover with his or her individual consciousness everything that has become the property of social consciousness [37, p.198]. Both the individual's "position" in social relations and its "position" in the composition of a social subject have only two limits of a person's social activity. These limits are the limits of possible human activity in a social relation [35, p.50]. An individual's position in social relations changes not by herself, but in an objective (social) way. Consequently, human subjectivity, which expresses and implements this position, has an objective nature [35, p.50].

2.2.2 Person as the subject of assignment of social causes

In the social-reflexive concept, the main factor of ontogenesis is education as a cognitive process (the process of upbringing and training). The main theoretical position of this concept is that individual development in ontogenesis can be carried out only in conditions of training and education [11, p.130]. For S.L. Rubinstein, individual development is a function of a certain cognitive content, which a child learns in the process of learning. This provision is crucial for the organization of individual development [11, p.339].

Learning plays a leading (defining) role in the child's mental development process. Internal contradictions between existing forms of cognitive activity and the new content that it mastered are the driving forces behind development. In the course of these activities, the child's development is not only manifested but also accomplished [34, p.158].

S.L.Rubinstein understood the learning process as a process of assignment of historical system of scientific knowledge to a child. For S.L.Rubinstein it is principal that in the process of learning a human being does not create

knowledge, but turns scientific knowledge already available in culture into means of his individual life activity. The system of scientific knowledge is formed in the course of social and historical development. For the student, it acts as an objective reality, which he or she is destined to exist independently of him or her public domain. As a result of his cognitive activities, he should appropriate this objectivity. In the process of learning as socially organized cognition, the system of scientific knowledge developed in the course of historical development acts before an individual as an object of attribution [38, p.31].

From the point of view of the social-reflexive concept, education can only have a culturally consuming character, since during the whole period of schooling a child is faced with a ready-made, well-established system of knowledge, discovered and developed by mankind throughout its previous history. Therefore, appropriation of the historically accumulated wealth of knowledge requires from the child a great effort of thinking and serious mental work, although he or she is mastering an already ready-made system of concepts [42, p.41].

The learning process is constructed as a two-way process of knowledge transfer and appropriation [9, p.375]. Based on the cultural essence of the learning process, the main content and the main task of learning is the acquisition of knowledge, skills and abilities [10, p.84] [11, p.505].

Emphasizing the specifics of the teacher (teacher), S.L.Rubinstein singled out the main, in his opinion, function - the transmission of messages (cultural samples of knowledge) and assigning these samples to students [10, p.84]. Therefore, the teacher is a transmitter of certain material that informs his student [11, p.505].

2.2.3 Social and reflective concept of development.

Cause-and-effect interaction between man and being

The central concept of the reflexive concept of development is that of the ontological subject. Proceeding from this concept, the ontological structure of being is the processes of formation of subjects as systems with an ever increasing degree of freedom. The degrees of freedom here are understood as the ability to reflect the world more and more fully and to influence the world. According to S.L. Rubinstein, the formation of subjects means the appearance of centers of rearrangement of being. This is the meaning of the activity of ontological subjects and their special ontological role in being. The principle

of the subject of activity expresses the fact that the subject is inherent in the ability to transform being [22, p.27].

An ontological subject is a certain being understood as an interaction of qualities lying at the intersection of infinite possibilities, an individual result of continuous and infinite interactions [23, p.318]. S.L. Rubinstein applies the concept of a subject not only in relation to the human being, but also in general to any level of development of existence. By this concept he denotes a qualitative peculiarity of the way of organization and way of development of any level of being [40, p.173].

From this point of view, to exist is to live at a level that corresponds to a given level of existing, given mode of existence [23, p.280]. To exist is to act and to be influenced, to interact, to be valid, i.e. to be effective, to participate in the infinite process of interaction as a process of self-determination of beings, mutual definition of one essence by another [23, p.279].

The existence is inseparably connected with the process of determination in the sense of objective determination of properties of one being in its interaction with another [23, p.280]. It means that existence is a continuous interaction of the beings, their mutual penetration and mutual resistance to each other [23, p.276].

At the same time, conservation laws act as the basis for chains of causation, as substance and sustainability in the process of causal change. And the causation itself acts as the transfer of action along the chain of causation [23, p.288].

In general, the world is an organized hierarchy of subjects with different ways of being, interacting with each other. In the human world, the determinant is the human social way of existence [23, p.264].

S.L.Rubinstein based his social and reflexive concept of the psyche on the concept of the essence of man as a set of social relations formulated by K.Marx [23, p.346]. Such definition of dates makes it possible to consider a human being as a part of being, as a finite being, which is a mirror of the Universe, a mirror of the whole being. A human being as a subject represents such a reality which represents ideally that which is outside of itself. Since there is an objective relation of human being's reality to the reality of being as a whole, a subjective relation of man to the world as a whole arises [23, p.345].

The fundamental characteristic of the human way of existence in the world is the presence of consciousness and action. It means that a person included in

the chain of causes and consequences is not only dependent on the living conditions, but also the living conditions depend on a person and his activity [23, p.341]. Activity and action imply impact, change of reality, generation of an objective product - be it a material or spiritual culture - which is a part of public circulation [9, p.206].

Self-determination is characteristic of the social mode of existence. By self-determination S.L.Rubinstein understands, firstly, the absence of initial rigid determinacy. Secondly, the subject's freedom to choose a direction, to regulate the character of the mental process flow. Third, self-regulation. Fourth, a special determinacy not only of the past and future, but of the present [22, p.187].

Treating oneself as a source of determination, as the reasons for subsequent significant changes in reality on the basis of a conscious prediction of their consequences, allows the subject to regulate his actions even before they have been accomplished [22 p.128].

Reflexive activity as a way of ensuring causal interaction

Psyche, mental phenomena arise in the process of interaction of the subject with the objective world, which begins with the impact of a thing on a person [38, p.27] [42, p.176].

By their nature, mental phenomena are included in the causal relationship of being both as conditioned living conditions and at the same time they condition behavior [23, p.359].

Any mental process is a reflection of objective reality [43, p.12]. In this sense, cognition is an ontological, objective process of causal interaction of the cognizant and the cognizant, which always implies a real sensual contact between the subject and the object [44, p.410].

Mental phenomena, first of all, occur in connection with the brain. Mentality is related to the brain in its origin. Mental phenomena occur and exist only as a function (activity) of the brain. Existence as an activity (process), as an activity of the brain, is the primary way of existence of mental phenomena [38, p.6].

The reflexive activity of the brain caused by external causal influences is a "mechanism" through which communication with the external world of an organism with the nervous system is carried out [38, p.118]. Reflexive activity is always an activity always determined from the outside [38, p.9].

The cognitive connection between mental phenomena and the objective reality of the outside world takes place only when the psyche is understood as a response activity of the brain, beginning with the impact of the outside world on it. But the brain is only the organ of psychic activity, not its source. The source of psychic activity is the world influencing the brain [38, p.7]. Mentality is a product of the brain, and the brain is an organ of psyche [45, p.93].

The extension of the reflex principle to psychic activity as a brain activity means that mental phenomena do not arise as a result of passive reception of mechanically acting external causal effects, but as a result of the brain response activity caused by these effects, which serves for the realization of human interaction as a subject with the external world [46, p.410]. Mental activity and higher nervous activity are the same phenomenon, the same reality [22, p.178].

Mental as a process is the initial and most important psychological reality from which all mental phenomena, functions, states, properties, etc. are formed in the course of human interaction with the world. [42, c.344]. As a result of mental process as brain activity, this or that mental formation arises: a sensual image of an object, an idea about it, etc. [34 c.35].

In a person, the mental activity of the brain acts as a new quality, as it participates in the regulation of his activity, expressing his needs and interests, his tendencies and attitude towards the world [38, p.168].

The peculiarity of the psyche is that it is both the real side of being and its reflection (the unity of real and ideal). But the characterization of the mental as ideal refers only to the product or result of mental activity, and not to the whole mental in general [43. p.10].

Consciousness as a mediating cause-effect factor

The human being acts as a single one, in which the whole world, all things, all mankind are represented. The way out of a single situation is through consciousness [23, p.345].

A human being acts as a part of being, being, being aware in principle of all being. Realizing means embracing all being, comprehending it through contemplation, thinking in it. A human being is a part embracing the whole. This is the originality of man, his place and role in the human universe [23, p.341].

The universe with the appearance of man is a conscious, meaningful universe, which is changed by human actions in it [23, p.330]. The world is aware of

itself through a human being [38, p.207].

Distinctive feature of a person is determinacy through consciousness. It means that the cause-effect interaction with the appearance of a person becomes mediated by his consciousness because his own action is mediated by his own consciousness [23, p.358].

The meaning of human life is to be the center of transformation of natural forces into conscious forces [23, p.385].

Including a person who subjectively reproduces his life in the chain of causes and effects can change, and even interrupt, the course and direction of the cause and effect process. Man changes this process not only because he possesses will and consciousness, but because regardless of will and consciousness he is included in the chain of causes and effects and mediates their connection. This is the objective nature of the subjective [37, p.105].

At the level of conscious human existence, a new type of determinacy arises. Now external causes act as social conditions of social life, which act due to their importance for an individual person [23, p.291].

The meanings of objects and phenomena and their "meanings" for an individual person are exactly the factor that now directly determines his or her behavior [23, p.368].

Development as a transition to increasingly indirect forms of causal interaction

The social and reflexive concept of S.L.Rubinstein's development is based on the principle of subject formation in activity. I.e. on the principle of inverse influence of the subject's activity on himself [22 p.20].

Development is carried out in conditions of continuous causal interaction between the subject and the object, which implies the simultaneous change of the object by the subject in the process of activity and the reverse effect of this change on the development of the subject [22, p.34].

Continuity of cause-effect interaction presupposes continuity of the psyche as a means of regulation of this interaction. This property of the psyche is expressed by the notion of "mental as a process", which means that in the course of continuous interaction of the subject with the object, in the course of constant transformation of the object, new content is "dug out" from it. This new content enriches the psyche, and therefore it develops and plays such an

important role in the regulation of behavior [42, p.373].

The development of man's consciousness is achieved in the process of his real activity, thanks to the fact that man, driven by his needs and interests, generates new and more perfect products of his work, in which he objectifies himself. As a result, more and more higher forms of consciousness are formed and developed in him [47, p.643].

The process of development is understood as a process of expanding and strengthening the real significance of the higher levels of consciousness. It means that without losing anything in its natural naturalness, the needs themselves, and not only the ideal forms built upon them, turn more and more into manifestations of historical, public, truly human essence of man [47, p.643].

During mental development, passing to more and more mediated forms of reflection, the person more and more stands out from the nearest environment and communicates more and more deeply with the wider sphere of reality [11, p.77].

The social and reflexive concept of human mental development sees its essence in an ever deeper reflection and change of reality, unlike the cultural and historical concept of human mental development, which sees its essence in the use of symbols and signs [11, p.78].

At the same time, from the point of view of the social and reflexive concept, human development is not a product of interaction of various external factors, but "self-moving" of the subject included in various relationships with the surrounding [11, p.133].

Psychological content of the concept of reflex development

The starting point of the social and reflexive concept is the provision on the objective nature of development. The objective logic of individual development, set by the system of social interaction, can neither be created nor changed by a person himself [40, p.200].

That is why individual development, understood as the development of a person's social essence, is performed not as a self-improvement, but as a result of a person's participation in the objective process of social life activity [37, p.128] [40, p.198]. At the same time, each person solves the task of creating his or her own individual "trajectory" within social life [41, p.17].

The character of individual development is determined not by immanent self-development, but by a change in a person's lifestyle [34, p.159]. Different periods in personal development are determined by different ways of life, forms of its existence, different for an infant and pre-pupil, for a preschooler and for a schoolboy, etc. [9, p.185] [34, p.159] [48, p.159].

At the same time, individual development is not a product of interaction of external factors, but "self-moving" of the subject included in various relationships with the surrounding world [9, p.184] [11, p.133].

Individual development is the life path of the individual [34, p.162]. At the same time, the higher the level of development, the greater the role of internal conditions [9, p.147] [11, p.97].

In individual development, qualitatively different stages (stages) are distinguished. Each such stage represents a relatively homogeneous whole [11, p.72]. In development, the leading importance belongs not to the formation of separate functions and processes, but to perestroika, change in the main type of activity (game, teaching, labor) [10, p.7] [34, p.436] [48, p.436].

The process of individual development represents a change in basic types of activities. The predominant role of play, then learning and, finally, work is characteristic of the different stages of individual development. Distinction of the main types of activities means a difference in attitude to the environment, which characterizes the consciousness of a developing person [34, p.159].

The life path of a developing personality cannot have common regularities, because each path is individual and represents an individual history of the personality [41, p.6].

Each child has its own individual development path. Different children not only develop at different rates, but also go through individually different stages of development [9, p.189] [11, p.137].

The main content of mental development is an increasingly deep reflection and change of reality [34, p.160] [11, p.78] [9, p.187]. The general logic of mental development consists in transition from direct forms of the psyche to its mediated forms [11, p.310].

The higher stage (form) of the psyche does not displace, but reconstructs the previously developed ones. In this connection, diverse and situationalally changing relations are formed between the "lower" and "higher" forms. Due to this, individual development acquires variability. As a result, the development

of each individual child differs not only in its pace, but also in the concrete way it goes [48, p.161] [11, p.137].

Psyche as a process develops (is formed) unknowingly (unconsciously). For example, the basic initial mental mechanism (analysis through synthesis) is unconscious. However, on the personal (activity) level of the psyche a person consciously (with the help of reflexion) regulates the course of these processes. However, such conscious self-regulation may still be insufficient to successfully solve the problem. In this case, much depends on the quality and level of the psyche as a process, on its intuitive, unconscious components, which are only indirectly, partially and very indirectly subject to conscious control in the course of activity [22, p.165].

The fundamental property of the mental as a process is continuity of the unconscious and conscious. Due to such continuity the "transition" from process to development is carried out. That is, the mental process by virtue of its extreme dynamism and variability starts to develop with necessity. And then psyche as a process turns into psyche as an ability [22, p.163] [42, p.188; p.290].

The main provision of the social and reflexive concept of development is that the genesis of action and the genesis of consciousness is a single process in which different levels of action correspond to different levels of consciousness [11, p.11]. From the point of view of the social and reflexive concept, consciousness as knowledge and human attitude towards objective reality and self arises as a result of individual development [38, p.168] [38, p.176]. But the psychic process itself, as a result of which the object is realized, is not conscious [22, p.164].

Functional ("horizontal") nature of reflex development

The central category of the reflexive concept of individual development is "functioning". It allows us to understand the continuity of qualitatively different stages of development of the psyche - animals and humans [10, p.262].

The main principle of the social and reflexive concept of development is functional and genetic. It allows integrating both stages of development of the psyche - animals and humans. The functional aspect of the human psyche is concretized through its activity [49, p.654].

This means that the sequence of development stages and structures depends on

the type of functioning (type of cause-effect interaction). In particular, in humans it depends on the nature (structure) of the activity [10, p.261] [22, p.54] [34, p.653].

The essence of social and reflexive development is the subjecc tive (causal) attitude, which is expressed in the fundamental principle of unity of activity and consciousness. This means that the manifestation of consciousness in activity is simultaneously the development of consciousness through activity. The manifestation of consciousness is its formation. Thus, in the social and reflexive concept the development is identified with functioning [49, p.653] and represents the formation, i.e. functional development.

Qualitative changes in the psyche at each stage of development depend on the nature of human functioning, on his activity as a subject of activity [49, p.653].

Stability and stability of forms of functioning is not their fixation and invariability. Stability and stability are manifested in functioning that contains infinite possibilities of variability. The dynamics of mental formation is connected with the immanent possibility of appearance of a new concrete way of behavior in each new situation [49, p.656].

The stages of development do not depend on the age of the child, but on the content, which in the course of his or her social and reflexive development he or she is mastering. In relation to different content, not only different children of the same age but also the same child may be at different stages of development. Therefore, different stages are not superimposed on one another and do not replace each other in a predetermined sequence once and for all, but coexist [48, p.161].

Social-reflective development is different in that for each child it is not only carried out at different rates, but is individually different stages of development. The logic of development is the logic of formation from a single one - to the general. It is a general regularity of individual development, which is not determined by age features, but determines them [48, p.162].

Individual development is not only stadial, but also hierarchical. The top level structures change the ways the lower level functions and are combined with them [10, p.264]. The ways of functioning of the "lower" levels that are part of the "higher" level do not change, but the conditions of their functioning change. This means (according to S.L. Rubinstein) that with the appearance of new levels of existence, all lower levels also act as new ones [22, p.184].

Thus, the social and reflexive concept of individual development is a functional and genetic concept. It is based on four fundamental positions: first, the psyche is formed in the process of its own functioning; secondly, the character of the formed psyche directly depends on the objective content on which it is formed; thirdly, the individual character of the psyche depends on the character of social relations of the collective to which a person belongs; fourthly, the mastery of the content of culture is made in the process of education, the mastery of the system of social relations - in the process of education [34, p.150].

Assigning social causes as a way of origin as determinants of individual development

Mental development in ontogenesis, unlike the historical development of the psyche, occurs in specific conditions of education and training. According to the difference of conditions, the course of development in one (historical) and another (ontogenetic) case also differs [9, p.182].

In this regard, there is a problem of correlation between the process of learning and the historical development of knowledge. In S.L.Rubinstein's opinion, there are two alternative points of view on its solution. The first is based on the theory of identity (the theory of recapitulation). From this point of view, the problem of correlation of the doctrine and historical path of cognition is solved at the expense of their identification. In this case, it is believed that the doctrine should reproduce (recapitulate) the course of historical development of cognition. The second proceeds from the recognition of the independence of the process of teaching and the process of cognition. From this point of view, the problem of the relationship between the teaching and the historical path of cognition is solved by the attitude to proceed from a child. Both these points of view proceed from the gap between logical and historical [34, p.494; p.497] [48, p.494; p.497].

From the point of view of the social-reflexive concept, there is a third solution. It consists in the recognition of unity (not identity) and difference (not total heterogeneity) of the teaching and cognition process [34, p.497]. It is the historical logic of the development of cognition that forms the common that unites both the historical development of cognition and the process of teaching [48, p.497].

The correspondence between the development of an individual person and the historical development of mankind is natural, as the development of individual

consciousness is mediated by the development of objective cultural products, which are created in the process of historical development of mankind. The basis of such correspondence is the same pattern of development of the subject content in the process of history of science and the pattern of development of this subject content by an individual in the process of learning [9, p.183].

But the unity of historical and ontogenetic paths does not mean their identity. The logic of the subject is formed in the process of historical development of knowledge depending on its specific-historical conditions. The logic of the course is learned in the process of individual development in the process of learning, depending on the specific-historical conditions of individual development. The distinction between concrete-historical conditions of historical and individual development with the unity of the logic of the subject makes the process of teaching and the process of historical development of knowledge different [34, p.497] [48, p.497].

Besides, the difference between historical and individual processes is that the subject content in the process of historical development is created, and in the process of individual development is mastered (appropriated). This means that in the process of individual development on an increasingly complex subject content more and more advanced abilities are formed, which in turn make it possible to master more and more complex content. The logic of the development of the subject content and the logic of the development of abilities are interrelated [9, p.183].

Children move from one level of mental development to another in the learning process [34, p.41]. Human mental development is a single process within which qualitatively different stages are distinguished. Each of these stages prepares the next one. These stages depend not on age, but on a specific content, which in the process of its development is mastered by a child [11, p.137].

The main factors determining individual development are maturation and learning [11, p.124; p.127]. Moreover, learning is not only built upon development as maturation creates readiness for it, but also determines the course of maturation and development itself [34, p.151].

From the point of view of the social and reflexive concept, learning is a formative educational process (development) [10, p.39]. In other words, learning is at the same time a process of the child's development [11, p.501] [10, p.79].

Thus, in real learning (through which the child passes, developing) and development (which takes place in the process of learning) there is both the mastering of a certain knowledge system and the development of the child's abilities [11, p.502] [10, p.79]. It means that the child does not develop at first and then is brought up and trained, he or she develops and learns by developing [10, p.78] [11, p.501].

The child does not ripen first, and then is brought up and trained. It matures while it is being brought up and taught. The child does not develop and then is brought up and trained. It develops, and at the same time it is brought up and learns. This is the basic law of the child's mental development [11, p.128].

Unity of learning and development means their interdependence and interpenetration in a single process, in which the cause and effect are continuously changing places [9, p.176] [34, p.151] [48, p.151].

From the point of view of the social-reflexive concept, individual development represents the formation of individuality and occurs as a person goes through his or her individual life path. In the process of this development a person takes possession of the content of culture (subject - in the process of learning, social - in the process of upbringing), and then, changing the reality by his activity, he changes himself [48, p.162].

According to S.L.Rubinstein, the provision that training should be ahead of development ("run ahead") is only true in the obvious sense that they teach what the child has not yet mastered. But learning must be in line with development. If learning begins, in fact, to "run ahead" of the child's development, then such learning will not lead to development, but will only provide formal drag [9, p.177].

The leading role of learning in the process of mental development, in which the child is not only an object, but also the subject of cultural appropriation activities, is to create a contradiction between the actual level of cognitive development and the potentially new content to master. This contradiction is a driving force of development, which in the course of this activity the child's development is not only manifested, but also fulfilled [34, p.158] [48, p.158] [9, p.184].

From a psychological point of view, learning as learning (appropriation) of knowledge is the implementation of thought activities (analysis, synthesis, abstraction and generalization) [50, p.233]. Such learning should correspond to the possibilities of the child at this actual level of development. Realizing

the opportunities of the actual level of development in the course of learning generates new opportunities. Thus, the previous level of development passes to the next one as a result of the realization of the previous level of development during training [9, p.177].

The main method of training, which is based on the idea of new opportunities as a result of the realization of actual opportunities, is the problem (research) method (T.V.Kudryavtsev, I.Y.Lerner, A.M.Matyushkin, M.M.Mahmutov, L.V.Putlyaeva, R.T.Sverchkova, I.S.Yakimanskaya, etc.). It represents a general way of organization of independent solution of possible problems for the pupil by means of assistance from the teacher [42, p.93].

The stages of a child's mental development, expressed in forms of observation, speech, and thinking, depend both on the content that the child learns during education and on the form of communication (forms of pedagogical influence) in which this development takes place [34, p.151]. From this point of view, an elementary school student is characterized by the development of empirical (reasoned) thinking, while a secondary school student is characterized by the development of theoretical (reasonable) thinking [9, p.432].

In general, the main idea of the social and reflexive concept of individual development is that, based on the social nature of man, each new generation assigns social patterns and stereotypes of social life in a ready-made form. These samples and stereotypes, being appropriated in the process of education, act as social determinants of individual development. A characteristic feature of individual development is that a person cannot overcome these stereotypes in an individual way. It means that the individual development in the social-reflexive concept has a final nature. And going beyond the limits of social stereotypes can only happen in a social way, not in an individual one. At first in the society as a whole and only then in the heads of individual people [41, p.200].

Internal mediation as a cause-effect mechanism

From the point of view of the social and reflexive concept, the principle of causal determinism is the very foundation of being [23, p.360]. It expresses the condition of all future events by the events of the past [51, p.40].

From the point of view of causal determinism, to exist is to act and be influenced, to be effective, to participate in an endless process of interaction, which is a process of self-determination of one being by another [23, p.279].

Interaction as existence is inextricably linked to the process of determination as objective determination of properties of one being - another. Thus, determinacy (mutual and self-determination) as the most important factor is introduced into the content of the notion of existence not only as a relationship, but also as a process [23, p.280]. It means that causal determinacy is inextricably linked with the very existence and its reconstruction [52, p.28].

From this point of view, existence acts as an act, a process, a process of action. Existence acts as causation towards itself. At the same time, the action of the cause acts as a process of its action. The process of action is performed not only outside (in consequence), but also inside the cause itself. In this case, it represents an inner "inertia" understood as maintenance of its existence. In this sense, the procedurally acting cause is the cause of itself. Or the "reflexion" of the reason in itself [23, p.287].

The process of cause action in itself is the internal movement of the cause, ensuring the self-preservation of the cause as a qualitative certainty [23, p.288].

From this point of view, a single process of causal determinacy can be seen as internal and external to the cause part itself. On the one hand, the internal process is a movement of the cause within itself and, on the other hand, it is an external process of causing a detached and detached consequence from the cause [52, p.28].

The process of causal determinacy is the creation of an effect separate from the cause. This means that the cause is the outcome of the internal determinacy process beyond the cause itself. Any object is characterized by such an internal movement, which is the basis of its qualitatively determined stable state. In this internal movement the object reproduces itself again and again [52, p.28].

Cause and effect are a single system whose general state is changed by the effect. This change determines the new nature of the action of the original cause. The reverse effect of the effect of the consequence on the cause changes with the change of the consequence, which, in turn, changes with the change of the cause, this consequence being caused [23, p.290].

The processes of caused determinacy are the processes of transferring the cause structures to the investigation structures. Cause means reproduction of the cause structure in the investigation structure, isomorphic representation of the cause structure in the investigation structure. The fact of translation of the cause structure into the investigation structure underlies the inherent reflection property of matter.

Reflection means the establishment of a special objective relationship between cause and effect, whereby each of the components of the relationship of reflection is made representative of the other, turning into a carrier of information about it. Chain-transmissible causal structures are used as information. Hence, chains of causal determinacy are at the same time chains of information transmission [53, p.372].

Preservation laws serve as a substantive (sustainable) basis for cause-effect determinacy chains. Thus, cause-and-effect determinacy acts as a transfer of action along the chain of cause [23, p.288].

The methodological peculiarity of the social and reflexive concept is the introduction of the internal factor into the principle of causal determinism as a determining character and result of causal interaction. S.L.Rubinstein proposed a fundamental formulation according to which ***"the external factor is mediated through the internal factor"*** [32, p.198].

Based on this formulation, the process and result of interaction was determined depending on both external and internal factors, and human activity began to be understood as depending on the interaction of the subject with the subject environment [54, p.47].

Internal conditions, formed under the influence of external, however, are not their direct mechanical projection. Folding and changing in the course of development, internal conditions themselves condition that specific circle of external influences to which the given phenomenon can be exposed. This should be the basis for a real solution to the most important problem of development and training, development and education [55, p.297].

With the new formulation of the principle of determinacy, the factor of internal causality was introduced into psychology, with which the ability to self-mobility and self-development began to be associated. In this understanding, the internal reason as the inner (essential) characteristic of a person acts as the reason for himself (causa sui). As a means and method of natural, objectively necessary reproduction of his specific way of existence in his basic properties. As a means of "self-motivation" [23, p.407].

Thus, the provision that the result of the action depends on the internal properties of the object means that any determinacy is a determinacy of others, external and self-determination (self-determination as a definition of the internal properties of the object) [23, p.359]. The role of internal conditions in the interaction is in self-determination, fidelity to oneself, and not only

submission to the external one [23, p.382].

Inclusion of a person, due to internal conditions subjectively reproducing his life, in the chain of causes and consequences changes the flow and direction of the process of natural interaction. A human being as a subject changes this process because he, possessing consciousness and will, objectively mediates the external causal link with his inner world [35, p.105].

Internally mediated conditions as a mechanism for the determination of reflexive activity

The principle of determinism (external causes acting through internal conditions) applied to the process of cognition becomes the methodological basis of the theory of reflexive reflection (cognition) [56, p.72]. Cognition is ontological, objective process of interaction between a cognizing subject and a cognized object. It always implies a direct sensual contact between a subject and an object [44, p.410].

In this direct contact, in the process of interaction of the subject with the objective world, which begins with the impact of a thing on a person, mental phenomena occur [38, p.27]. The basis of all mental phenomena becomes the mental activity, which is a reflection activity, or cognitive activity [56, p.71] [42, p.171].

When performing a cognitive action, the function of the psyche is to reveal the objective difference between the logic of the action and the logic of the object. The action must be adequate to the object to transform it in accordance with the logic of the object [40, p.237].

The starting point of the process of reflexive reflection is perception (sensation). To perceive means to engage in the process of interaction with the existing reality, to become involved in it (ontologize) [23, p.283]. Only in perception the cognizable object is given as an existing one [23, p.313].

The social and reflexive concept based on the action of external causes through internal conditions, which themselves are formed depending on external influences, is the application of the principle of determinism to the mental activity of the brain [38, p.9].

At the same time, it is believed that the connection of mental activity with the objective reality of the outside world takes place only when it is considered not as a deterministic activity of the brain from within, but as its response. This response activity begins with the impact of the outside world on the human

brain. But the brain is only the organ of mental activity, not its source. The source of psychic activity is the external world affecting the brain [38, p.7]. Reflexive activity of the brain is always the activity determined from the outside [38, p.9].

Therefore, the reflexive activity of the brain caused by external influence is the "mechanism" through which the organism (human) is connected with the outside world [38, p.118].

Thus, mental activity by its nature is directly related to the brain. It arises and exists only as brain activity. Existence as a process (brain activity) is the initial way of existence of all mental activity [38, p.6].

By its nature, mental activity (mental phenomena) is included in the causal interrelation of being both as conditioned conditions of human life and as conditioned human behavior [23, p.359].

The distinctive feature of the mental process (reflexive activity) is the way it is determined. It is determined by the subject himself or herself not before the beginning, but directly in the course of the mental process and is carried out due to continuously and involuntarily developing determinants. This feature of the determinacy of the mental process gives grounds to speak about the social and reflexive concept as an existential one [49, p.664].

Continuous and involuntary determinacy leads to the fact that the mental process turns into a mental development (in the development of abilities). This occurs as a result of the involuntary character of generalization by the cognizing subject of the cognized object and the ways of its cognition [42, p.205].

Generalization leads to the fact that due to the reflexive activity in the brain an image of the thing is created, under the influence of which the reflexive activity itself appears. This image represents its subjecc tive ideal form resulting from reflection [57, p.68].

The only source of human cognition leading to the emergence of ideal forms is a feeling [45, p.283], along with perception and consciousness, which represent images of the outside world [57, p.65].

All thinking begins with the analysis of empirical data presented in sensations, and it cannot begin with anything else [39, p.250]. Through sensations, the ideal form of things (logic of things), objects of thought, enters an individual's psyche as a defining (deterministic) beginning and is reflected in his thinking

[34, p.174]. From this point of view, any personal motives of people are psychological means of subordination of a person to the objective logic of things in the process of activity on revealing the objective logic of the tasks solved by them [10, p.42].

Consciousness, as well as any mental function, always assumes the cognitive attitude to an object which lies outside of consciousness [33, p.243]. In the psychological plan consciousness acts as process of comprehension of the world around and of itself by the person. Consciousness as the own means assumes certain set of knowledge with which associates associates and is realized [33, p.245]. Consciousness as a result of comprehension is knowledge functioning in the process of recognizing reality [33, p.245].

Therefore, to realize means to reflect the objective reality by means of the generalized values objectified in the word socially developed [33, p.244]. But the very mental process, as a result of which the object is realized, is not realized [22, p.164].

The presence of consciousness in a man means that in the process of life, communication, and learning he has developed such a system of generalized knowledge objectified in the word, with the help of which he can realize the environment and himself as a means, recognizing the phenomena of reality through their relations with this knowledge [33, p.245].

In this connection, reflexion as the content of consciousness acts as internal conditions included in the interaction of external and internal conditions of the cognition process [52, p.79].

Internal mediation as a mechanism for determining social and reflexive development

The social and reflexive concept of development is based on the methodological position of K.Marx that the formation of the human psyche is mediated by the products of his activity and is performed in the process of this activity [58, p.27].

The direct consequence of this provision is the principle of unity of products of activity and its subject, put by S.L.Rubinstein in the basis of the concept of historical and individual development of consciousness [11, p.128].

This principle expresses the essence of development that takes place in conditions of interaction between the subject and object. Interaction is carried out as unity of processes of objectification (objectification) and naming

(subjectification). Objectivization as "transition" of the subject to the object is a process of manifestation of the subject in actions. Subjectivization as a "transition" of an object to the subject is a development of the subject under the influence of the results of these actions [58, p.25].

In the dialectics of objectification and subjectification the essence of the social and reflexive concept of the subject's development is concluded [22, p.20]. In the dialectics of objectivization- subjectivization the unity of personality is manifested. The subject in the acts of his creative amateur activity is not only discovered and manifested; he is created and defined in them. In creativity is created by the creator himself [59, p.148-154] [60, p.101-107].

The essence of development in the social and reflexive concept is revealed through interaction of the subject and object. The manifestation of consciousness in activity is simultaneously its development, i.e. , formation [10, p.261] [22, p.53].

Creation (development; formation) of an acting subject under the influence of products of own activity is provided by the fundamental mechanism "external causes through internal conditions". At the same time, internal conditions act as the basis, the main determinants of individual development [61, p.345].

In the social and reflexive concept of development the human being acts as an integral system of internal conditions through which all external influences (including pedagogical) are refracted. Internal conditions are formed depending on previous external influences. Thus, refraction of the external one through the internal one means mediating external influences by the whole history of human development. This history contains the history of evolution of living beings, the history of mankind, and the history of human development. Therefore, the internal conditions represent the unity of the common, the special and the singular. The personality is more significant, the more the universal is represented in its individual refraction [49, p.663].

Human development occurs as a solution to problematic situations. The problem lies in the contradiction between explicit data and implicitly given in a situation of interaction. The solution of the problem lies in the explicitation of an implicitly given one. Such transformation of an object occurs at the expense of its essential (universal) selection as a result of its alteration by its actions and leads to its exceeding. In other words, it leads to development [23, p.362].

Continuous analysis, highlighting in the object what is essential in its

interaction and changing the object by human actions is inevitably beyond its limits [23, p.362].

In the course of constant transformation of the object by the subject as a result of their continuous interaction, all new content is "dug out" from the object, which enriches the psyche more and more. Therefore, it develops [42, p.373].

The general principle of unity of the subject of activity and products of his activity is embodied in "analysis through synthesis" as a universal mental mechanism of development. Thanks to it, former products of activity are included in new connections and, thus, continuous continuity of the whole mental process in its historical and ontogenetic development is ensured [42, p.320].

Continuity means that development in a social and reflexive concept is determined by its past, that future stages of development are determined by previous stages of development. But, at the same time, development goes beyond its past and each new stage is qualitatively different from the previous one. Thus, the development continuously goes beyond the limits of any predetermined standard (criterion) [42, p.200; p.205]. The development criteria arise in the process of development itself, not before it starts [42, p.203].

Continuity and irrelevance to a predetermined criterion is the main contradiction of any development. The essence of continuity is that every next stage arises from the previous one, which is its inner condition. Therefore, all stages are continuously genetically linked. The continuity of the process is naturally manifested as the development of this process and, accordingly, the principle of determinism grows into the principle of historicism, into the universal principle of development [42, p.200; p.205].

The contradiction between continuity and irrelevance is resolved by the subject's prediction of the future decision. The process is the only possible form of development in which this contradiction can only be resolved [42, p.205; p.206]. At the same time, the final stage of the development process is not only a logical and subject-specific characteristic of the cognizable object. First of all, it includes those mental neoplasms which arise and are formed in the course of development in the process of more and more profound cognition of the object [42, p.213].

The position of the mental as a continuous process means that its determinants are formed only in the process itself and not before it begins. Only

ontogenetically the first external influences (for example, on a newborn) and hereditary traits precede the appearance of the mental process, but then they only change in it [42, p.166].

This means that the essence of the principle of unity of consciousness and activity is that the psyche does not arise (is not generated) in activity, but is only formed [42, p.362].

It means that interiorization leads not from material external activity deprived of internal mental components, but from one way of existence of mental processes (as components of external practical action) to another way of their existence (relatively independent of external material action) [62, p.368].

At interiorization it is a question not of occurrence of mental processes (mental activity) from external, material activity, but about transition of one form of activity to its other form. Transition of one form of existence of mental processes (as components of external, practical activity) into another form (as theoretical, mental activity). About transition of mental processes of one level to mental processes of another higher level and, in this connection, about transition of one form of their existence to another form of existence. At the same time, "interiorization" is not the very "mechanism" by means of which this transition is carried out, but only its effective expression, a characteristic of the direction in which this process is going [62, p.368]. Therefore, the fact of interiorization expresses not the appearance, but one of the stages of the subsequent development of the psyche [22, p.167] [42, p.163].

In the social and reflexive concept of development, the emergence of neoplasms and, moreover, new ways of functioning depend on the nature of activity functioning. In other words, the nature of interaction between the subject and the object. This is the simultaneity of the manifestation and formation of consciousness in activity, depending on the activity of the subject of activity. The manifestation of consciousness in activity is simultaneously (not sequentially) the development of consciousness through activity and its formation [10, p.261] [22, p.53].

The statement about the simultaneity of the manifestation and development of consciousness is deduced from the more general statement that any manifestation of a human being leads to the change of this very essence [23, p.383]. Another consequence of this fundamental position is the principle of unity of structure and function, which is the basis of the functional-genetic concept of development. It means that each new level of development opens

more and more opportunities, and realization of these opportunities forms new structures [49, p.655].

Thus, individual development (ability development) is performed as a spiral movement, where the realization of the existing opportunities, expressing the abilities of this level, opens up new opportunities for the development of higher level abilities [63, p.293].

The mechanism of such development is based on the principle of unity of manifestation and *development*, formulated by S.L.Rubinstein in his work "The principle of creative amateur activity". The peculiarity of this principle is to understand the activity both as a means of change of the object and as a means of self-change [22, p.34].

This principle expresses a universal development mechanism that operates at all levels of matter. It consists in the fact that any action, which has caused an internal change of the system and has brought it to a new state, will itself be changed because the new state of the system (the result of the previous action) changes the conditions under which the said action has appeared, and, consequently, changes the character of the action itself [63, p.51].

Thus, a person by his actions continuously changes the situation in which he is, and at the same time continuously goes beyond himself [23 p.344].

The principle of unity of the subject and his activity sets the mechanism of historical development: changing the nature by his action, a man changes himself as a result of the reciprocal influence of nature changed by him [11, p.123]. In the historical process of interaction with a developing object the subject also develops [42, p.201].

The specific feature of the social and reflexive concept of development is the simultaneity of direct change by the action of the subject perceiving the impact of the object, and the reverse change by the impact of the changed object of the acting subject. This scheme is a scheme of self-development, since the development of the subject is caused by his own influence, which changed the object, and as a result of such change developed, in his turn, the acting subject himself [22, p.34].

Thus, a person as a subject has the ability not only to change the object, the course of events, but also to change himself. Therefore, the attitude of a person as subject is bidirectional: to the object (another person, situation) and to himself. But if the change of the object occurs arbitrarily (consciously), then

the change of the subject itself occurs involuntarily (unconsciously) [35, p.127].

An individual as a subject acts as a set of internal conditions through which all external influences are refracted [42, p.199]. Multiple types and activity levels of a subject form an integral system of internal conditions through which any external causes act as a basis for development [61, p.344]. From this point of view, human existence acts as its action, as its self-perception [23, p.279].

Self-cause is provided by the presence of internal causality (internal conditions) and is understood by S.L.Rubinstein as self-motivation, as self-development. In this understanding, internal conditions act as the cause of self (causa sui) for a person. I.e. as a reproduction of a specific way of own existence in its basic properties [23, p.407].

The ability to self-moving, in the course of which a living being reproduces himself, is a characteristic of the subject of activity. To be a subject means to reproduce oneself, to be the reason for existence in the world [64, p.176].

Awareness of oneself as a source of determinacy, as a reason for subsequent changes in reality, allows a person to regulate his actions before they are made on the basis of a conscious prediction of their consequences [22, p.128].

The mechanism of action of external causes through internal conditions determines the understanding of the ways of development and formation of man [55, p.297]. Folding and changing in the process of development under the influence of external causes, internal conditions themselves condition the external influences to which a person can be exposed. The solution of the problem of development and training, development and education should proceed from this law [55, p.297].

Essential to the social reflexive concept is that not any external cause can cause development, but only one that is adequate to the internal conditions [39, p.274].

Internal mediation as a mechanism for assigning social causes

The object that affects the subject in the process of his training is a system of scientific knowledge, which is formed in the course of social and historical development. It acts for the individual's thinking as an "objective reality", which he or she presupposes to be a social asset that exists independently of him or her and should be appropriated in his or her cognitive activities. In the process of learning as a socially organized cognition of man, the system of

scientific knowledge developed in the course of historical development appears before man as an object of appropriation [65].

From this point of view, the doctrine is to appropriate knowledge and skills developed as a result of historical development [9, p.77]. This occurs in the process of learning activities of a student who learns the knowledge already obtained by science [9, p.202]. From the point of view of the social and reflexive concept of development, the process of durable learning is a central part of the learning process [9, p.84].

Learning activity (teaching) is the main component of a unified learning - process - a two-way process of message delivery and knowledge appropriation [9, p.375] [10, p.84].

A teacher [11, p.505] is the transmitter of a certain material informing the student, the main part of whose work is the presentation of the material [9, p.88].

His work is based on the fundamental principle of visibility, which in teaching is not just an external didactic technique, but has deep gnoseological and psychological foundations in the nature of the thinking process [9, p.384].

The fundamental basis for a lasting appropriation (assimilation) of knowledge is laid in the primary perception of the material. The strength of learning depends on the way in which new material is delivered to students. The durability of assimilation and memorization is essential due to the nature and quality of presentation, in which the material is presented to the student (in the teacher's lecture, in the textbook) [10, p.87].

The nature and role of the perception of learning material as a first stage in the various stages of learning is changing significantly. In the younger school years, the specific weight of sensual perception is still very high. This is connected with the special importance of the principle of visibility in the primary education system [10, p.92].

Knowledge acquisition presupposes certain internal conditions for its development and leads to new internal conditions for further knowledge acquisition [55, p.292]. Knowledge learning and thinking development is a dialectical process in which the cause and effect are continuously changing places [39, p.244].

In this sense, every person is not only an object but also a subject of education [55, p.301]. And when the object of pedagogical influence becomes another

person, the task of the teacher is to induce, through the influence on him, overcoming his alienation, the negative independence to cause him to independent existence. For this purpose it is necessary, breaking both in the conditions of his existence and in him, what distorts his human essence, to assert his existence. This is the being in which his own being is realized, but he obtains it through his teachers. Hence the development of pedagogy of a different style, which represents the formation of man through his attitude to him, through his influence on him [22, p.27].

In the conditions of training, socially developed knowledge acts as the meanings of the words of the language. As a result of learning, these meanings, assigned by students, become means of reality awareness [66, p.245]. Awareness as a generalization is made as an activity mediated by learning to master the concepts created by the previous historical development and general notions enshrined in the meaning of the word in the scientific term [9, p.382].

From this point of view, the motivation of human behavior in general, and the motivation of learning activity in particular, is a subjective determinacy of man by the world, mediated by his reflection. The meanings of subjects and phenomena and their subjective "meanings" act as factors directly determining behavior [23 p.368].

The peculiarity of learning activity is that the act of mastering a new level of knowledge, on the one hand, suggests an appropriate level of thinking as its internal condition, and on the other hand, determines the creation of new internal conditions for the mastering of new knowledge. In the process of mastering the elementary system of knowledge as a cultural means fixing in itself the objective logic of the subject, a person develops a subjective logic of thinking, acting as an internal condition for the mastering of knowledge at a higher level. Human development is performed in this spiral process of interaction of developing thinking with the objective content of the socially developed knowledge system [39, p.244].

In the learning process, when a student is unable to solve a task without the help of the teacher, the teacher should not immediately inform him/her of a ready-made solution or force him/her to learn a ready-made example of the way to act. By presenting students with individual components of the mode, such as those that they are able to perform on their own, the teacher can thus move the students' independent activity forward. This is what a teacher should do if he wants not only to provide students with formal knowledge or to form once and for all data and fixed skills for solving standard problems, but also to

"teach them to think" [22, p.144].

As a method of organization of such training the problem-research method (T.V.Kudryavtsev, I.Y.Lerner, A.M.Matyushkin, M.M.Mahmutov, L.V.Putlyaeva, R.T.Sverchkova, I.S.Yakimanskaya, etc.) is used, aimed at putting the pupil before the need to solve the problems and problems he can do. At the same time, the role of the teacher is to organize problem situations, set tasks for students and provide assistance when necessary [42, p.93].

Additional to the problem research method is the "hint method". It is based on the fact that a hint suggested from the outside can determine the thinking process only through its internal conditions, which have already formed by now and which objectively find themselves in interaction with such a hint [42, p.240].

Conclusions. The social and reflexive concept of human development proceeds from the understanding of the whole as a set of interacting objects. The world as a historical whole is a multilayer (multilevel) formation, each layer (level) of which represents a specific subject with a characteristic way of existence.

The human being as an object and subject of the human subject world arises simultaneously with the characteristic for him/her, a qualitatively defined type of interaction - social. The reflexive process of reflection (psyche) as the ability to have an image of the influencing cause and the reflexive process of response (reflexive action) as the ability to embody this image in social reality become the main properties of a person necessary for him/her to be a participant of social interaction.

With the emergence of the human being, a subjective reality emerges in the structure of objective reality, which is inseparable from the person who participates in social interactions. The content of subjective reality is the subjective ideal form of society as an aggregate external cause, reflecting and expressing the integral nature of external social influences.

The subjective ideal form, on the one hand, is the generalized reality of social relations, and on the other hand, the internal conditions that express the invariance of a person, his generalization. Thanks to internal conditions, an infinite number of social interactions acquire the subjective reality that generalizes them. The presence of subjective (ideal) reality enables a person not only to participate involuntarily in social interactions, but also to build them arbitrarily. Anticipate and take responsibility.

A special specific feature of human beings as an object of social influence and subject of social action is that, possessing consciousness and action, he arbitrarily causes the necessary causal effect on himself, thus becoming a creator, creator of his life. The peculiarity of psychological components of a reflexive action is determined by its causal mechanism and the peculiarities of the brain's reflexive activity that provides it. Since causal determinacy is a determinacy of the social past, as far as all mental images and processes, including processes and images of reflection, internal conditions and subjective ideal forms, are the result of past interactions.

From this point of view, the purpose of a reflexive action is a subjective image of past results of interactions. Therefore, like any mental image, the purpose of a future action is also a trace of the past, acting as an expected future. In other words, the goal is an image of the past result desired in the present as the future result. This means that from the point of view of the social reflexive concept, the future is the preferred past in the present.

At the same time, a person in the conditions of a social system of interaction is determined in a social way, is a "projection" of social relations, which he or she cannot change by his or her own action and within the limits and limits of which he or she has to be and find an opportunity to build his or her individual life. From this point of view, a person's individual development is determined by the actual social reality. He does not create the determinants of his development on the basis of his consciousness and will, but appropriates the social determinants with external nature.

In this connection, within the framework of the social-reflexive concept based on the mechanism of external and internal nature of causal determinacy, the problem of self-development as a result of the generation by man himself the determinant of his own development is not put and cannot be put, so it cannot be solved.

2.3 Signal intermediation as a mechanism for assigning ideal forms

2.3.1 Social nature of the sign-mediated person

The methodological basis of cultural-historical psychology was formulated by L.S.Vygotsky, who believed that human attitude to nature can be explained only on the basis of its social nature [14, p.81]. For L.S.Vygotsky the society is the only determinant of development of an individual person [14, p.85].

Considering culture as a product of social activity, he believed that psyche as

a transformed culture, being individual, always remains quasi-social [67, p.145]. The mediocrity of human existence by culture is embodied in the instruments of human activity. It is in the tools that the culture is accumulated, mastering the ways of using which the human being mastered his own cultural ways of existence.

These general provisions were characteristic of the whole cultural-historical approach, which was spread in the early 20th century in different countries. This approach was not only adopted in Russia. Similar views could be found in the leading German, French, English and American scientists of those years (J.Dewey, I.Stern, L.Levi, and others). From the point of view of cultural-historical approach, a human being is a being who creates himself by turning nature into culture [68, p.137].

A.N.Leontief, following the Marxist thesis about the social nature of man, asserted that the fundamental for man attitude that defines his "external" and "internal" world is the relationship between man and society [69, p.244]. The thesis about the social nature of man is the basis for all researches within the framework of cultural-historical school (P.Y.Galperin, A.V.Zaporozhets, D.B.Elkonin, V.V.Davydov, L.I.Bozhovich, M.I.Lisina, etc.). These studies were based on the assumption that the transfer of methods of activity from one generation to another requires their samples, standards [70, p.251] [71, p.39].

The social nature of man in cultural-historical psychology is understood as his condition of the social experience of mankind, recorded in cultural means. The main phenomenon of culture, which accumulates all human experience and presents it to an individual person, is an ideal form. Social nature of a human being is expressed in the fact that a human individual becomes a human being only if he or she becomes able to control his or her carrying out, to control his or her behavior, to build arbitrarily his or her command depending on changing situation.

From the point of view of cultural-historical concept, the possibility of controlling one's own existence is provided by cultural means (signs), the meanings of which are ideal forms of social activity. The peculiarity of the cultural-historical concept is the fact that each individual does not produce, create or generate ideal forms, but finds them ready in culture, takes them from culture, appropriates them and makes them individual means of their own existence.

From this point of view, the ideal form is the main determinant of human

existence, and the assignment of the ideal form, i.e. its transformation from a social (cultural) form into an individual one, is a process of cultural development, the determinants of which are the assigned ideal form. From the point of view of cultural-historical conception, the social nature of a human being is expressed in the "external" character of the target definition, provided by the cultural ideal form, which sets, defines and forecasts the limits of possibilities of an individual person, despite the active, active and independent character of attribution.

The "external" nature of the determination is justified by the fact that the cultural ideal form, which is the main determinant of individual existence, is not produced by the individual himself, but is the subject of appropriation. Thus, the external character of the targeted determinacy of human existence in the cultural-historical concept sets the externally conditioned character of any individual development.

The cultural-historical concept of the psyche proceeds from its basic thesis that the source of development lies outside the child, in his or her social environment [72, p.188]. This concept is built on the thesis about the social nature of man. The term "social" is of great importance for the cultural-historical conception. In the broadest sense, it means that everything cultural is social. Culture is the product of human social activity. The sign as a means of cultural development is outside the human being, separated from him and serves as a social organ (means).

All higher functions have developed not in biology, not in history of pure phylogeny, and the mechanism which is the basis of the higher mental functions is a cast from social. All higher mental functions are essence of the interiorized relations of a social order, the basis of social structure of personality. Their structure, genetic structure, way of action - in one word, all their nature is social; even transforming into mental processes, it remains quasi-social. The human being keeps the functions of communication with himself [14, p.145].

L.S.Vygotsky proceeded from the same thesis of K.Marx as S.L.Rubinstein. Namely, the mental nature of the man represents set of the social relations transferred inside and became functions of the person and forms of its structure [14, p.146]. From the point of view of the cultural-historicalconcept, the source of arbitrary behavior is not the invention of ways of behavior, but the application of social attitude to oneself, the transfer of the social form of behavior into one's own mental organization [73, p.33].

For a person, external society is his source, the main determinant of his individual existence. Social determinacy is carried out, firstly, as external and, secondly, as initially forced. The coercive ("external") nature of social determinacy is embedded in the very social nature of the individual psyche. At the beginning of use, the sign does not matter for the child and, therefore, it cannot be anything else but an external stimulus. The operation of using the sign at the beginning of development of each of the higher mental functions, if necessary, is at first the nature of external activity. The sign at first is an external stimulus, to which value can be given later [73, p.16]. But at the first step, the child acts, being guided not by the sign, but by the actions of an adult.

Any higher mental function arises as a form of social cooperation and only then turns to an individual way of behavior. Originally the sign acts in a command of the child as means of social communication, becoming then means of mastering own behavior. The sign only transfers the social attitude to the subject inside of the personality. All symbolic activities are initially a social form of cooperation and forever preserve the social way of functioning. The history of the origin of higher mental functions is the history of transformation of social means of behavior into individual means of behavior [73, p.56].

Thus, the adoption of the Marxist position on the social nature of man as a methodological basis of the psychological concept of man, in fact, led L.S.Vygotsky and S.L.Rubinstein to the recognition that the human individual is a product of society, a system of social relations, which as "external" determinants (causal or target) completely set and define individual existence and development of the human individual [73, p.56] [38]. This situation is especially evident in the theories of learning developed in these schools, which, despite different understanding of the connection between learning and development, are based on the process of appropriation of externally given cultural patterns, which, as determinants having a social nature, determine individual existence of a human being.

2.3.2 Person as the subject of assignment of ideal forms

From the point of view of the cultural-historical concept, individual development is the transformation of social and cultural norms into individual norms. These norms, assigned and transformed into the determinants of individual development, become the system-forming factors of individual cognition (consciousness) [74, p.161] [71, p.49]. As a result of assignment, a child's psyche acquires a specifically human content and a specifically human

structure [75, p.92].

In cultural-historical psychology, the process of appropriation is given special importance. It is connected, first of all, with the main provision about the external (social) nature of the human psyche. From this point of view, the child should be regarded as the subject of appropriation of social and cultural norms, but not as their creator. This means that social and cultural patterns are not constructed anew in the course of education. Their universal content is given outwardly and can only be appropriated [76, p.35].

Cultural-historical psychology is characterized by the understanding of the human individual as a certain projection of the socio-cultural sphere on the individual, whose psyche represents the functioning of historically assigned forms of society's activity [70, p.249]. In this sense, the child always acts in accordance with those socio-cultural patterns (norms) of activity that he or she has appropriated but has not produced. The production of social norms is the prerogative of society as an independent and alienated special individuu al reality [70, p.272].

The main point of training, from the point of view of cultural-historical psychology, is appropriation of a normatively approved way of activity in the form of knowledge. In this way, the child develops an idea of the structure of activity, which he or she then applies in practice [77, p.123].

In cultural-historical psychology, socio-cultural patterns act, in fact, as the borders and limits of individual consciousness and activity, and the borders of the transmission of patterns of consciousness and activity [78, p.100]. In our opinion, the problem of self-development should be solved by understanding a person (child) as a subject of constructing the determinants of his or her own development, rather than trying to derive his or her active position from the situation of assigning socio-cultural determinants that a priori already exist in culture and are not constructed by him or her [79, p.54].

2.3.3 Cultural-historical concept of development Gunsmithing as the central idea of the cultural-historical approach

The main idea of the cultural-historical approach - the idea of instrumental mediation - was inherent not only in Russian cultural-historical psychologists. It is also central to the ideas of John Dewey, whose works were well known to Russian educators and psychologists. He believed that tools and works of art were originally natural things that were given a different form in order to effectively perform a type of behavior [68, p.132].

In Russia the main ideas of cultural-historical psychology were formulated by L.S.Vygotsky. His main idea was the idea of mediating the human psyche. He argued that the psyche is not observable and can be found only by the mediated method. In this connection, L.S.Vygotsky put forward a hypothesis about double mediating of "ingrowth" of a person into culture (social reality). He saw the key to the study of human psyche in the study of means of such "ingrowth" (tools and signs). At the same time, he believed that application of tools in the process of individual activity forms only the simplest (direct) mental functions. And only use of signs makes the person actually a man, forms his consciousness [80, p.131].

The recognition of the instrumental nature of the human psyche meant that mental activity was the same as any other activity and that its effectiveness depended on its means [81, p.165]. L.S.Vygotsky believed that the fact of using guns creating fundamentally different determinants of human psyche was not new in itself. What is new in the cultural-historical concept is the study in the development of the unknown in animals mental system determined by the use of implements [14, p.32].

Analyzing the peculiarities of gun activity, he came to the conclusion that the basis of the analogy between the sign and the gun is their mediating function. Therefore, from the psychological point of view, they can be referred to one category [14, p.89]. Just as application of the tool reconstructs natural activity of body organs, transition to the mediating sign activity radically reconstructs all mental activity. L.S. Vygotsky has suggested to name such reconstructed mental activity "the highest mental function" [14, p.90].

The essence of the mediating activity based on the use of signs is that a person determines his or her behavior with the help of signs in accordance with their psychological nature [14, p.89].

Since culture is a product of social life and human activity, the problem of cultural development is a problem of social development. The sign (as well as the tool) is outside the human being, separated from him and serves as a social tool (public body) for individual behavior management [14, p.145].

Intermediate an ideal form as the essence of the human psyche.

L.S.Vygotsky believed that man has two mental systems, each of which corresponds to its own system of mediating stimuli. The simultaneous presence of the system of stimuli given to a man by the nature of his stimuli and the system of stimuli created by a man himself is a distinctive feature of the human

psyche [14, p.78].

L.S.Vygotsky understood the development as the deployment of mental processes and behavior in time, as a transition to a new principle of their generation. For him, the model of such a transition from a natural (direct) to a cultural (mediated) form of behavior was sign-mediating [82, p.13]. By signs, he understood any artificially created means whose purpose is to influence behavior [14, p.81]. Any artificially created stimulus, which is a means of mastering the behavior (alien or own), is a sign [14, p.78].

The sign organization is the most important distinctive feature of all higher mental functions [73, p.55].

In the structure of the higher mental function, the sign and the way of its use are the defining whole [14, p.116]. Any symbolical activity is directed on the organization of practical operations by creation of stimuli of the second order (signs), giving the chance to plan own behavior of the person [73].

In the process of individual development, the child learns the forms of his or her behaviour, mastering the stimuli (signs). And the system of stimuli (signs) is a social force given to the child from outside [14, p.154]. The sign mediocrity of human behavior and his ability to control his command (to generate forms of his behavior), in this connection, gives grounds to say that in the center of L.S.Vygotsky's cultural-historical theory is the human subjectivity [82, p.15].

The social nature of the mediation is ideal

The main idea of cultural-historical psychology is that the historical development of behavior from animals to humans has led to a new quality of behavior [14, p.57]. It means that it is not nature but society that should be considered as a determinant factor of man [14, p.85]. It is possible to understand the active adaptation to nature, its change by a human being, not from natural relations, but only from the social nature of man [14, p.81].

Only culture creates special forms of behavior; it modifies the activity of mental functions; it builds new stages in the developing system of human behavior [14, p.29]. The methodological basis of this position is the paraphrased position of K.Marx that the mental nature of a person is a set of the social relations transferred inside and became functions of the person and forms of its structure [14, p.146].

The driving force that determines the beginning of the process of cultural development, triggers the mechanism of ripening and pushes forward on the

way of development is not inside but outside the human being [83, p.133]. The special meaning of this thesis by L.S. Vygotsky is that before him everything mental was considered to be initially internal. He said something that nobody dared to say before him. It was a breakthrough in psychology, because in relation to at least the higher mental functions it was recognized that they come from outside [81, p.165].

It is the fact that in L.S. Vygotsky's theory consciousness and subjectivity are outside the individual that allowed us to speak about it as a non-classical psychological theory [82, p.16].

Based on the external nature of the human psyche, individual human behavior is a product of development of a wider - social - system [73, p.56]. For the development of a child, the social environment is not an environment, not a condition for development, but a source of development [84, p.15]. This means that everything that a child should have already exists in society, including needs, social tasks, motives, and even emotions [12, p.10].

L.S.Vygotsky considered the social and historical experience of mankind as a source of mental development, and he considered assimilation of this experience to be the main form of development [72, p.155].

The meaning of cultural mediation (ideal forms of mediation) is to accumulate the activities of previous generations in the present (in cultural ideal forms). Therefore, the social world is of special importance for the development of the child, since only other people can create the necessary conditions for this purpose [68, p.168].

These special conditions are necessary for the transfer of a system of incentives (signs) to the child, which in relation to him/her is an external social force [14, p.154].

L.S.Vygotsky adhered to the point of view shared by many psychologists of that time that a human being would be born a biological being, and a personality would become in the process of ontogenesis, by learning the social and historical experience of mankind [85, p.31] [86, p.33]. The overwhelming majority of psychologists still see the child's appropriation of social and historical experience as the main factor of mental development [72, p.188].

Ideal form of mediation as the essence of cultural development

The idea of cultural mediation has its origins in Plato. Even then, the ideal form, which was interpreted as the soul, which existed forever before and

independently of the real world, acted as its essential factor, mediating the real (material) world and, by this mediation, generating it. The soul (ideal form) was initially the source of its generating integrity, but neither the soul itself nor the reality it generated was yet considered by Plato as developing.

Many generations later, this idea was the basis of the development theory, where it was already assumed that the human soul develops as a result of knowing oneself through knowing the absolute soul (*Hegel*). The absolute soul (ideal form) was understood as the initial basis of the integrity of man and the world, generating all its real manifestations. The process of development was an aspiration to the absolute (the highest ideal form) and was characteristic only for an individual person, but not for the most absolute ideal form.

Hegel thought the world was mostly over. So an adult creates only what is already there. Wisdom is the fusion of subjective activity with his world. The unsub is an identity with himself. The knowledgeable truth is the whole truth [87, p.378]. Hegel did not deny the progressive movement of the world, but believed that it occurs only through the activity of huge masses and becomes visible only with a very significant sum of the created [87, p.378]. In this sense, the development of man, thanks to his gradual introduction to the absolute ideal form, is initially set in the same way as its result. It does not affect neither this ideal form, nor the world in which this development takes place.

The ideas of cultural (social) mediocrity continued to develop in the 20th century. In France, where E. Durkheim and his pupil L. Levi-Bruhl affirmed the primacy of social life in the creation of specifically human forms of consciousness. Their focus was on mediating common cultural symbols [68, p.48]. In Germany, where the cultural-historical approach was most developed [68, p.48] and whose cultural-historical thought was one of the sources of ideas of the Russian cultural-historical school [68, p.251] (in particular, psychology of L.S.Vygotsky is completely based on German idealistic epistemology) [68, p.13].

In the 30s of the XX century, the cultural-historical approach existed in different countries. It was shared by leading German, French, British and American scientists of those years (J. Dewey, W. Stern, L. Levi-Bruhl and others). The cultural-historical idea gave rise to the story of a man making tools and creating himself, turning nature into culture [68, p.137].

Ideal form as a source of cultural development

The problem of the ideal form in domestic psychology was originally

developed by L.S.Vygotsky, then by D.B.Elkonin, and is now studied by B.D.Elkonin in connection with the problems of organization of the development act [3].

In L.S.Vygotsky's opinion, the world of ideal (higher) forms, the world of culture is the source from which a child draws samples, images. The child compares these ideal images with his own actions. This comparison is the source of development. The source of development for the child is the environment, because it is where the ideal, higher forms "live". The adult is the mediator between the child and the worlds of higher, ideal, cultural forms. He sets models of action which a child learns (appropriates, makes his own) in the process of his development [3].

The fundamental novelty of L.S.Vygotsky's idea of the ideal form is that social environment and culture were understood by him not as a condition or one of the factors of development, but as a source of mental development [2, p.94].

According to L.S.Vygotsky, the ideal form as a form of cultural behavior is a product of historical development of mankind. And in any historically created product of human culture universal human abilities formed in the process of creation of this product are accumulated (postponed) [2, p.94].

These universal abilities, according to the views of L.S.Vygotsky and D.B.Elkonin, are given to the child in an ideal form as social models. The idea of the given content of cultural development (universal abilities) and its form (ideal form) that precedes and guides the real one are the basis of the theory of cultural development [88, p.122].

The starting point of the cultural-historical theory of development is the idea of interaction of real and ideal forms. The ideal form, which interacts with the real, exists in the individual development of man initially and completely sets his character. From the first steps of child development, the cultural ideal form determines the formation of all forms of the child's psyche [2, p.94].

According to L.S.Vygotsky, real forms are natural (direct), natural properties of man, which are an organic basis for the development of higher mental properties. "Natural" (direct) mental functions are transformed in the course of development into "cultural" (higher) mental functions. The higher mental functions are new formations of individual development in spite of the fact that they are already present in culture in the form of cultural samples of child mentality [2, p.94].

Since the area of L.S.Vygotsky's research was the psychology of consciousness [72, p.5], he believed that the driving force for the development of the psyche was the interaction of the consciousness of a child and an adult (P.Y.Galperin), rather than the initial practical activity of the child (as, for example, is the case in the theories of S.L.Rubinstein and A.N.Leontiev) [22, p.87].

L.S.Vygotsky considered the notion as a unit ("cell") of consciousness and therefore saw the way of research of formation of consciousness in a child in the development of concepts [89, p.241]. The reality of the existence of the concept, then an indivisible unit, which contains all the properties inherent in speech thinking as a whole and consciousness as a whole, is the "inner" side of the word - its meaning [83, p.16].

Therefore, it is speech (speech sign) that acts as the main psychological means of development. By means of speech, the child's own behavior is also included in the sphere of objects available for transformation. With the help of speech, the child appears capable of mastering his or her own behavior, treating himself or herself from outside, considering himself or herself as an object. Speech makes it possible to master one's own behavior as an object at the expense of its preliminary organization and planning [73, p.24].

As the speech sign is the sociocultural means accumulating universal experience, as far as specifically human higher mental functions come from forms of speech communication between people. They are mediated by signs, first of all, by the signs of language. The higher mental functions develop during the doctrine, i.e. joint activity of the child and the adult. Therefore, training, organized and not organized, is a common channel of mental development, and mental activity is a derivative of external subject activity and the process serving it. These are the main provisions of the cultural-historical concept of L.S.Vygotsky [90, p.25].

Social situation of development as a form of transformation of direct mental functions into mediated ones

The concept of "social situation of development" is associated with two important characteristics: the social environment and the child's attitude towards this environment. In connection with the idea of a correlation between ideal and real forms, the social situation of development can be understood as a removed form of determining the source of development. This reasoning goes back to the basic definitions of the act of development (B.D.Elkonin). In comparison with "one's own" and "another's", cash and ideal, there is the

content and the driving force of development: not only and not so much the environment itself, but the attitude to it, the child's selective perception of it turns out to be the key to understanding age. The social situation of development is a child's attitude towards the social environment [3].

L.S.Vygotsky believed that the human psyche is two genetically related systems of direct (natural) and indirect (higher) functions. Therefore, in his opinion, psychology should solve two problems: to reveal the lowest in the highest and to reveal the aging of the highest of the lowest [14, p.140].

Any mental function, any behavior can be understood only through own history (P.P.Blonsky) [14, p.133], through history of cultural development. Process of cultural development consists in transition from the lowest form of psyche - to the higher, more difficult in the genetic and functional relation. The boundary separating both forms is the ratio of stimulus and reaction. For the inferior form, the determinacy of behaviour by the external (natural) stimulus is essential. For the higher form, self-determinism through the creation of artificial means and determinism through their own behavior will be essential [14, p.77].

The fundamental law of psychology of cultural development is the law formulated by P.Jeanet at one time: in the process of development, the child starts to apply to himself or herself the same forms of behavior that others initially applied to him or her. The child himself/herself appropriates social forms of behavior and makes them means of organization of his/her own behavior. The appropriateness of this law is especially strong when using the sign [14, p.144].

With the transition to sign operations, a person moves on to psychic processes of the highest complexity, leaves the field of natural history of the psyche and enters the field of historical forms of behavior [73, p.62]. The peculiarity of human behavior is caused by the fact that he or she actively interferes in his or her relations with the environment and changes his or her behavior through the environment, subordinating it to his or her power [14, p.86].

The genetic law of cultural development of a child can be formulated as follows: any function appears twice. First, it appears outside, between the child and the adult as a social category (interpsychic), then inside the child as a psychological category (intrapsychic) [14, p.145].

Since the cultural development of a child, according to L.S.Vygotsky, is an adaptation to the external (social) environment, since from the very first days

this adaptation is achieved by social means through people around him. The way from a thing to a child and from a child to a thing lies through another person. And if the transition from biological to social path of development is a turning point in the history of a child's behavior, the path through another person is the central direction of cultural development [73, p.30].

Relationships between the higher mental functions were initially real relations between people. I treat myself the way people treat me [14, p.142]. Therefore, any symbolical activity of a child is initially a social form of cooperation and keeps the social way (structure) of its functioning on the whole way of its development. Therefore, the history of higher mental functions is the history of transformation of social means of organization of behavior into individual means of organization of behavior [73, p.56].

The sign initially appears in the child's behavior as a means of social communication, then becoming a means of mastering their own behavior. The sign only transfers the social attitude to another person inside the personality [73, p.56]. Autostimulation with the help of an artificial means can arise only after such means have already been created to stimulate the other person [73, p.62].

Since the sign is first a means of communication, and only then becomes a means of organizing human behavior, cultural development is based on the use of signs. The inclusion of signs in the system of behavior takes a social (external) form [14, p.142].

This means that the source of a child's intellectual activity and control over his or her behavior is not the invention of a certain purely logical act, but the application of a social attitude to himself or herself, the transfer of the social form of behavior into his or her own mental organization [73, p.33].

Internalization of operations, interiorization of higher mental functions associated with changes in their structure, L.S.Vygotsky called "spinning" [73, p.71]. All higher mental functions are the essence of interiorized social relations, the basis of social structure of a person. The higher mental functions have social nature. Even transforming into mental processes, they remain quasi-social. The man and in private keeps functions of dialogue. The mechanism underlying the higher mental functions is a cast from social [14, p.145].

For L.S.Vygotsky the mechanism of transformation of culture into the world of the person, as the mechanism of formation in the child of cultural forms of

command has acted the mechanism of interiorization opened in the French sociological school (the mechanism of transformation of external in internal). He believed that each cultural form of command originates initially as a form of cooperation with other people, as an imitation of another or an appeal to an adult. Only in the next step, this form becomes an individual function of the child himself [2].

According to L.S. Vygotsky, the driving force of development is learning as a specially organized process of influence on a child. To explain the internal connection between learning and development, L.Vygotsky introduced the concept of the zone of immediate development. The zone of the nearest development is defined by those tasks which the child solves either independently or with the help of an adult. The concept of the zone of the nearest development simultaneously acts as a concretization of the mechanism of interiorization: the external (social) form of mental processes makes the zone of the nearest development, the internal (mental) one makes the zone of actual development [2].

The social situation of development is the starting point for all changes in development during a given (age) period. It defines the forms and ways in which a child can acquire new personality traits that he or she finds in social reality as the main source of his or her development. It is the way in which social becomes individual [91, p.258]. From the point of view of cultural development, what the child is able to do independently is the development of yesterday. And what the child is able to do in cooperation is the development of tomorrow. The area of not yet ripe, but already ripe processes is the area of the nearest development of the child [91, p.264].

Among modern concepts, two deserve attention. From D.I.Feldstein's point of view, the social situation of development is a form of organization of "social development of an individual". One of the most important regularities of this development is the change in the social position of the individual [2]. From the point of view of A.V.Petrovsky, the social situation of development is a form of the organization of development of the individual, the leading factor of which is not a monopoly of a concrete activity, but an activity-mediated type of relations, which is formed in a child with a group of reference for him during this period [2]. The significance of modern approaches to understanding the social situation of development lies in the fact that they allow for a clearer distinction between general psychological and personal development, which, in turn, makes it possible to distinguish between "mental" and "subjective" [2].

Substantive activity as a universal attitude

A.N.Leontief introduces the concept of activity and subject already at the level of a living organism. In this case, in interpreting psyche as a superstructure ensuring adaptation and survival of the organism in the external environment, he takes a similar position with biologists (*Severtsov*, *Shmalhausen*), developing, as well as they do, the idea of advanced development of activity over psychic reflection [92, p.18].

According to A.N.Leontiev, the history of human activity begins with the acquisition of subject matter by life processes. This happens when elementary forms of mental reflection arise, when irritability turns into sensitivity, into the ability to feel [93, p.85] [94, p.68].

Although A.N.Leontief did not deny qualitative difference of human psyche from animal psyche, at the same time, his subject activity acted as a universal category expressing all forms of life relations of an organism with surrounding reality [95, p.523]. As a result, A.N.Leontief extended the principle of unity of consciousness and activity to the psyche of animals. In general, this principle looks like the principle of unity of psyche and activity [96, p.487]. Taking all this into account, it can be argued that the activity was considered by A.N.Leontief as equally inherent in both humans and animals [97, p.129].

Subjective activity as a truly human attitude

Like L.S.Vygotsky, A.N.Leontief proceeded from the social nature of man and his psyche. He also believed that the basis of human personality is the totality of his social relations with the world. But he interpreted these relations as realized by a set of diverse human activities [98, p.201]. Therefore, the human consciousness was not given to him initially, but it is not generated by nature. Consciousness is born by society, it is produced by it [98, p.151].

A.N.Leontief was based on the main provisions of cultural-historical concept of L.S.Vygotsky about instrumental mediating of human mental functions, but interpreted them as provisions about instrumental ("instrumental") structure of human activity and its inclusion in the system of relationships with other people [98, p.150].

The main meaning of the category "activity" introduced by him was that mental reflection is not caused by the influence of external objects in itself (as, for example, it is considered in the social-reflexive concept), but by intentional practical actions with objects that are subject to and similar to the properties of

these objects, the properties of the object world as a whole.

As a result of these substantive actions, there is a mutual transition between the interacting subject and object. This transition is carried out, on the one hand, as a result of discerning the initial "goals" that determine the subject's activity and, on the other hand, as a result of discerning the object as a transition of the real form of the object into its ideal form, into its subjective image.

Subject (object) determinacy of activity is possible due to its special quality - universal plasticity, similarity to properties, relations and relations of the objective world (V.V.Davydov). This "narrow" understanding of the objectivity of the cultural-historical concept of psyche (L.S.Vygotsky, A.N.Leontiev) differs significantly from the natural-science "non-objective" concepts (S.L.Rubinstein, B.G.Ananiev, B.M.Teplov, etc.) [99, p.24].

From the point of view of the concept "subject activity", cognition is a product of development of activity of a cognizing person in the subject world [93, p.20]. Activity is a developing process of translation of reflected [100, p.137]. That is why, taken in relation to the psychic reflection of the world by a person, the activity becomes a subject of psychology [100, p.148].

Based on the concept of subject activity, A.N.Leontief first proposed a three-component scheme of mental reflection functioning: "subject - activity - object" [77, p.124]. He believed that, by its nature, mental reflection is already in its initial forms a reflection of the subject. That is, reflection of the properties of the environment in their objective links and relations [99, p.22]. The nature of psychic sensual images consists in their objectivity, in the fact that they are generated in the processes of activity, which practically connects the subject with the external subject world [98, p.175].

In spite of the fact that mental images are generated as a result of subject activity, in essence the act of cognition does not and cannot coincide with the act of generation of the most cognized object [74, p.168]. Therefore, such a birth should be understood as penetration into the deep and natural basis of the same things [101, p.65]. In this sense generates - means "understands" the same objective thing, but in its internal regularity, not in the chaos of random patterns [101, p.65].

Any act of human activity is mediated by the manufacture and use of the weapon. The method of use of the instrument is a socially fixed (publicly denounced) method of its action. In this way, the weapon is a fixed (mediated)

experience of the genus and it is possible to use the weapon or create a new one only after mastering (pre-distributing) this experience. This is why the gun relationship turns out to be a communication relationship at the same time. And the production of forms of communication is provided by a certain way of subject activity [16, p.23].

From this point of view, subject cognitive activity is a way of distributing socially significant tools (or more broadly - socially significant, cultural objects). In other words, the transformation of a real form of cultural object into an ideal form of subject activity. Therefore, cognition, in its essence, is the formation and development of an ideal form of human cognitive practically transforming activity [102, p.129]. The very objects, created by human hands, have a way of action with them [103, p.132].

The mental form of an ideal (ideal form of activity) is secondary to its natural form of a real object (E.V.Ilyenkov). The psyche of an individual person (the ideal form of the object activity) is formed in the process of mastering the human objects by turning the natural form of the ideal into its mental form [8, p.32].

A more specific analysis of the ideal form genesis allows us to say that psychology distinguishes between different phenomena of the psyche. Psychology should be considered in two aspects: psyche as an image and psyche as a process [100, p.145]. On the basis of A.V.Zaporozhets's position that the mode of action is a living reflection of the subject [104, p.17], it is possible to draw a conclusion that any image as a mental formation is nothing but a rolled-up process of action with the subject [100, p.145], the subject scheme of action.

This makes it possible for psychic organisms to anticipate and take into account their properties even before direct contact with other bodies. This is possible because the psychic reflection of the objective world already represents those things which the organism has yet to meet [90, p.48]. The development of an activity is the transformation of a real form of cultural object into an ideal form of activity.

Generation of ideal forms as development

Unlike L.S.Vygotsky, A.N.Leontyev understood the content of the social attitude as the relation of reflection. In this connection, cultural development as a transition from natural forms of life to cultural man as a subject of development in the psychological theory of activity began to be understood as

a transition from actions with things to the reflection of their essence by man as a subject of cognition [82, p.32].

On this basis, A.N.Leontief believed that psychology is a science about the emergence and development of man's reflection of reality, which occurs in his activity and which, mediating it, plays a determinant role in it [93, p.224]. As internal driving forces of the process of activity development, he considered the initial duality of human relations with the world, their dual mediating - the subject activity and communication [98, p.217].

A.N.Leontief believed that the notion of reflection contains the whole idea of development, which he associated with the existence of different levels and forms of reflection [98, p.121]. The consequence of this was the belief that there is no fundamental difference between mental reflection and mental generation [100, p.124] [105, p.109-126].

The objective basis for this provision may be the fact that the concept of the subject actually reflects the subject. But if it is deep enough and developed, it becomes an artificial means of reverse influence on reality and begins to remake it. Globally speaking, the self-sufficient reality of nature produces a concept of itself in order to develop further with the help of this concept. Therefore, the origin of the sign and its final role in the development of the subject world seem only objective. The subjective (ideal) form is a service phenomenon necessary for the development of the same objective reality [101, p.199].

Assignment of ideal forms as a form of development

The social nature of a human being in the psychological theory of activity is expressed by the statement that the main relation characterizing the life of a human being and on which the whole matter depends is the relation between an individual and society [69, p.244]. An individual as a person does not exist outside society. He becomes human only as a result of the process of appropriation of human activity by him [93, p.36]. Therefore, the main principle of ontogenetic development of man is the principle of reproduction in the properties and abilities of an individual of all-round properties and abilities formed in the course of the social-historical process [87, p.119].

This reproduction of historically formed human abilities and functions is the result of an appropriation process. As such, attribution is the process by which the ontogenetic development of man achieves that in an animal by the action of heredity. Namely, the embodiment in the properties of an individual of

achievements of development of the species [87, p.115].

Thus, what is achieved at the level of animals by the action of biological heredity, in humans is achieved through social heredity, assimilation - a process that is the process of humanizing the psyche of a child [106, p.196].

Unlike animals, all human psyche is set from the outside and all its structures are subject to assimilation [107, p.128-135]. A human being becomes a human being by appropriating the psyche as a property of a genus. That is, by making his own what was before a common property [70. p.338] [108, p.451] [109, p.84].

The difference between assignment as a social adaptation and biological adaptation is that biological adaptation is a process of changing genetically embodied in an organism species abilities, and assignment is a process, due to which in individual development of a human being generic abilities are embodied in properties of an individual [13, p.115].

This gives grounds to understand the process of attribution as a mechanism of social "heredity" [13, p.140].

Thus, the process of mastering the world of objects and phenomena created by people in the course of historical development of society is the process of formation of specific human abilities and functions [13, p.94]. All this testifies to the fact that mental (spiritual) development of people is a product of the process of appropriation, which does not exist in animals [13, p.114].

From the point of view of psychological theory of activity, the process of appropriation is carried out not in the course of interaction of consciousnesses (as L.S.Vygotsky understood it), but in the course of development of real relations of a person to the world. But these relations depend not on a person (his consciousness), but on the social conditions in which he lives and on how his life develops in these conditions [106, p.217]. Assignment as a method of social inheritance (reproduction in new generations) of a human image (or kind) of life activity as a system-forming factor ensures unity and integrity of all forms of human life activity [16, p.45].

Proceeding from the social (external) nature of a human being, a person entering life meets an objective world already transformed by the activity of previous generations. However, this world of cultural objects embodying human abilities is not originally given to a child in this quality. For this quality, this human side of the surrounding objects (objects) to be discovered by an

individual, he or she must perform his or her own activity in relation to them. The activity is not identical, but adequate to that which they crystallized in themselves [106, p.195].

The child encounters not the natural world of undeveloped objects, but the cultural world of human objects, which carries with it the historically developed experience of people, crystallized and idealized (conceptual) [70, p.272]. In this sense, the objects created by mankind act as objective, outside of a given individual, existing forms of expressing cognitive norms and standards. Assigning by an individual these norms, which have social origin, makes it possible to function as structural components of individual cognition [71, p.39].

These norms and standards, cultural "models" of activity are used by people to transfer ways of activity from generation to generation [70, p.251]. The child can assign these samples as a result of interiorization, which A.N.Leontiev, unlike L.S.Vygotsky, understood as a way of forming the internal plan of consciousness as a result of moving external activity "inwardly" [93, p.98].

The category of subject activity introduced into psychology by A.N.Leontiev became a new step in the cultural-historical concept of development. If in L.S.Vygotsky's works training (assignment) acted mainly in the form of interaction of consciousnesses, in the form of speech communication of the adult and the child, A.N.Leontiev has shown that behind development of consciousness, psyche and the child's personality lies not interaction of consciousnesses, not speech communication, but practical subject activity.

In this connection, in contrast to L.S.Vygotsky, whose driving force of the child's development is the influence of an adult's word on the child's consciousness, according to A.N.Leontiev, the driving force of the child's mental development was his own activity, as a result of which (under the guidance of adults) the child appropriates historically formed human abilities [2].

Dual conditionality of a single development process in ontogenesis

According to L.S.Vygotsky, all theories of individual development can be reduced to two main types of concepts. The first type: development is a process of implementation of the sett tions, as a result of which nothing new arises. The second type: development is a process of self-moving, as a result of which a new, which has not been at the previous stages arises [91, p.247]. In cultural-historical theory, development is understood as a process defined by two

attributes. The first sign of development. At any change, the substrate underlying the developing phenomenon remains the same. The second sign of development. Unity of the development process, presence of internal connection between the past stage of development and the change that has occurred [14, p.149].

On the basis of these two features, in L.S. Vygotsky's opinion, in the individual process of a child's development both types of mental development are presented, which we find in an isolated form in phylogeny: biological and - historical (natural and cultural) [14, p.30].

These two types of development are constituents of a single development process, within which two main qualitatively peculiar lines differ: biological formation of elementary processes and socio-cultural formation of higher mental functions [73, p.66].

The peculiarity of cultural development is that it takes place under conditions of biological type. On the one hand, cultural development is superimposed on the processes of growth, maturation and organic development of a child and forms a single whole with him/her [14, p.31]. On the other hand, since organic development is carried out in a cultural environment, if it turns into a historically determined biological process. In its turn, cultural development is accomplished simultaneously and together with organic maturing. This means that the carrier of cultural development is the ripening organism of the child [14, p.31].

It follows that the final engine of cultural behavior, its energy basis, stimulus is the same instinct or the same material need of the body, which drives animals. Only in man the instinct exists in a latent form and his behavior is connected with the change of his properties [14, p.153].

Mutual conditioning of natural and cultural types of development is the basis of genetic connection between elementary and higher mental functions. L.S.Vygotsky believed that the earliest maturation of complex sign operations is performed in the system of purely natural forms of behavior and that higher functions have their "uterine period" of development, which connects them with the natural bases of the child's mentality. These two points: the history of development of higher mental functions and their genetic connection with natural forms of behavior - he called the natural history of the sign [73, p.66].

The natural history of the sign indicates that cultural forms of behavior have their natural roots in natural forms, that they are connected with them by

thousands of threads, that they arise no other than from these latter [14, p.131].

A consequence of natural history is that landmark operations are not simply invented by children or adopted by adults. They arise from something that is not initially a landmark operation and that only becomes so after a series of qualitative transformations, from which each conditioned the next stage, being itself conditioned by the previous one and binding them as stages of a single, historical process [73, p.66].

The genetic connection of natural and cultural forms of the psyche is carried out on the basis of the basic law of development, the essence of which is the simultaneity of maturation of separate sides of the personality and its various properties [29, p.261]. This law is expressed by L.S.Vygotsky in the concept of "the zone of the nearest development", the basis of which is the relation of already matured and only maturing mental processes. Adequate training to the zone of the nearest development allows organizing effectively the processes of cultural development.

During the course of development each mental function in due time passes outside of organic system of activity peculiar to it as natural function, and begins the cultural development within the limits of cultural system of activity. But thus, both systems develop together and cumulatively, forming a plexus of two genetic processes different in essence [14, p.34].

According to L.S.Vygotsky, the idea of development is the key to understanding the unity of all mental functions and the emergence of higher, qualitatively new forms. As a result, he comes to the position that higher psychic formations arise from lower forms of development [73, p.67].

The peculiarity of the transition from the animal system of activity to the human system, made in the individual development of the child, is that the human system of psyche not only replaces the animal, but both systems continue to develop simultaneously and jointly.

This means that the child does not move to a new system after the old, organically conditioned system has developed to the end. The child does not come to the use of tools, as a primitive man who has completed his organic development. The child crosses the boundaries of the biological system when the system itself is still in its initial stage of development [14, p.33].

The specificity of human ontogenesis is that it represents both organic system of biological activity and instrumental system of social activity, which in

phylogenesis are presented separately and developed separately from each other. The system of the child's psyche at each stage of development is determined simultaneously by the degree of his organic development and the degree of his mastery of the instruments. Two different systems develop together, forming a new third system, a system of a special kind. If in phylogeny the system of human psyche is determined by the development of either natural or artificial organs, in ontogeny the system of child psyche is determined by both simultaneously. It follows that in ontogenesis the development of the psyche system reveals double causality [14, p.33; p.34].

Genetic relationship between natural and cultural types of development

In the history of cultural development of a child, the concept of the structure of the psyche is found twice. First, it arises from the very beginning of the history of the child's cultural development, being its starting point. Secondly, the process of cultural development itself should be understood as a change in the initial structure and the emergence of new structures of the psyche on its basis. As a starting point is a primitive, natural, natural mental whole conditioned by biological peculiarities. The higher structures arising in the process of cultural development are called higher structures, as they represent a genetically more complex and higher form of behavior [14, p.115].

There are two forms of child mental development. The first form plays a role in the history of natural development. It is characterized by the fact that any new stage of mental development, which is available in a curtailed form in the preceding stage, comes about through the deployment of internal potentials. It is not so much the process of development as the process of growth and maturation. The second form plays a role in the history of cultural development. It is characterized by the fact that the new stage does not arise from the deployment of potentials concluded in the preceding stage, but from a real collision between the organism and environment and living adaptation to the environment [14, p.137].

The link between a child's natural development based on maturation and the child's cultural development is a revolutionary rather than an evolutionary one. Thus, development is not the result of a gradual and slow accumulation of small features, but of dramatic and fundamental changes in the very type of development, the very driving forces of the development process [14, p.151].

Therefore the history of development of any higher mental function is not continuation and improvement of elementary function, but represents radical

change of a direction of development and further movement of process in the completely new plan. Each higher mental function is specific new formation [73, p.56].

The individual development of the child goes along the path of a profound change in the structure of child behaviour. At each new stage, the child not only changes the form of behavior, but also performs it largely in a new way, attracting new means and replacing some mental means by others. Development goes, first of all, in the direction of mediating those psychological operations, which at the first stages were carried out by direct forms of adaptation. Complication and development of forms of children's behavior is caused by the change of attracted means and restructuring of the mental process [73, p.77].

Psychological features of the cultural type of development

Any development, according to L.S.Vygotsky, is a process of formation and appearance of a new one [29, p.254]. Cultural development is a "ingrowth" of a child into an external culture, accumulation of internal experience, and is a development of a different type than the uterine development of a human fetus [14, p.292]. L.S.Vygotsky believed that there is every reason to apply the concept of development to the process of accumulation of internal experience [14, p.150].

The main criteria for dividing individual development into individual ages are neoplasms. From this point of view, the sequence of age periods should be determined by the alternation of stable and critical periods [29, p.254]. Since the personality of a child changes as a whole, and the laws of changing this whole determine the movement of each part of the child, at each age level we always find a central neoplasm corresponding to it, which leads to the whole process of development and characterizes the reorganization of the whole personality of the child on a new basis [29, p.256].

The most important and essential point in determining the dynamics of age development at each age level is understanding the relationship between the child and the social environment as mobile [29, p.258]. The internal structure of the development process was called the age structure by L.S. Vygotsky [29, p.256]. Each age has a specific, unique and unique structure. At transition from one stage of development to another, the whole structure of age is reconstructed [29, p.257].

At each age, the pre-existing structure changes to a new one. The new structure

emerges and develops as the age develops. Therefore, the dynamics of development should be understood as a set of all those laws that determine the period of occurrence, change and adhesion of structural neoplasms of each age [29, p.258].

At the beginning of each age period, a age-specific relationship between the child and social reality is formed. This relationship is called the social situation of development at a given age. The social situation of development is the starting point for the whole development during a given period. It defines completely those forms and the way, following which the child acquires new and new properties of personality, drawing them from social reality as the main source of development, the way, by which social becomes individual [29, p.258].

The relationship between the child and the social environment exists as an experience. An experience combines personal ("my experience") and environmental ("attitude towards something") aspects. The experience shows what the environment at the moment is for the individual. Experience is a kind of individual projection of the social development situation. In a certain sense, experience and social situation of development are synonymous (social situation of development is a unique, age-specific attitude of a child to his or her surrounding reality, first of all, social. Experience is this attitude) [3].

The social situation of development, specific to each age, determines strictly legitimately the whole way of life of the child, or his social being within that age [29, p.259]. From the child's life in this social situation, which develops to the beginning of a certain age and is determined by the characteristic relationship between the child and the environment, new formations characteristic of this age arise and develop. These neoplasms, which primarily characterize the reorganization of the child's consciousness, are not a precondition but a result (product) of the age development. A change in a child's consciousness arises on the basis of a certain form of his or her social being typical of the given age. That is why the maturing of neoplasms always refers not to the beginning, but to the end of a certain age [29, p.259].

Emerging neoplasms in the child's mind lead to what the child himself changes. This cannot but have the most significant consequences for further development. If the previous dynamics of age development determined the path of direct movement from the child's social being to the new structure of his or her consciousness, then the subsequent dynamics determine the path of the reverse movement from the changed structure of the child's consciousness

to the rearrangement of his or her being. The new structure of consciousness, which is acquired at a given age, inevitably means a new character of perception of the external reality and activity in it, a new character of perception of the child's inner life itself and of the internal activity of his or her mental functions [29, p.259].

With the emergence of the notion of neoo formations, another condition of development is introduced - the internal structure of the personality (the structure of consciousness) (for L.S. Vygotsky these two terms are synonyms). Thus, development is determined by complex relations of external and internal conditions - the structure of consciousness and the social situation of development. These complex relations make up the internal logic of development about which L.S.Vygotsky has constantly written [3].

In cultural-historical theory, the question of the origin of consciousness was fundamental. According to L.S.Vygotsky, the source of development is the environment (social environment, social situation of development, ideal forms), so the critical period is the moment, the act of development, in which the impact of the environment crystallizes in the form of a new formation, becomes a special subject of study. New formations characterising structural transformation of consciousness are not a prerequisite, but the result of age-related development.

Changes in a child's consciousness are based on the age-specific form of his or her social being. In crisis there is a dialectical return: the formed type of consciousness (neoplasm) itself changes the social situation of development - from the changed structure of the child's consciousness to the reconstruction of his being. The consequences of the new structure of consciousness are enormous. It means a new character of perception of external reality and activity in it, a new character of perception of the child's inner life itself and the inner activity of his or her mental functions.

Thus, in cultural-historical theory the deductive way of consciousness development is recreated: from the new structure of consciousness to the new perception of reality. With such a view on the process of development, it is possible to avoid mechanism and uniformity. Not just the environment forms a person (*being determines consciousness!*), but it is more complicated: the environment provokes the formation of psychic neoplasms, while those, in their turn, change the perception of the environment and, in fact, the environment itself [3].

The general scheme of organization of cultural development of the child consists of four components. First, other people act in relation to the child. The child then interacts with others. Finally, it begins to act on others. At the end, it begins to act towards itself [14, p.225].

The concept of cultural development ("development of higher mental functions") covers two groups of phenomena that are continuously connected but never merge. First, the processes of mastering the external means of cultural development (language, writing, account, drawing). Second, the processes of development of higher mental functions (arbitrary attention, logical memory, formation of concepts, etc.) [13, p.24].

The child's cultural development goes through four main stages, one following the other and arising from one another: instinct, conditioned reflex, intellectual reaction and cultural behaviour. Taken as a whole, these stages describe the cultural development of any mental function [14, p.129]. At the natural (primitive) stage, the child solves the problem directly. After solving the simplest problems, the child moves on to the stage of using signs without realizing the way they act. Then comes the stage of using external signs and, finally, the stage of using internal signs [14, p.161].

Child development is least likely to resemble a stereotypical process that is hidden from external influences. Here, in living adaptation to the external environment, the development and change of the child takes place. In this process, new and new forms emerge, not just the stereotype links of a pre-existing chain [14, p.137].

Every external action is the result of an internal genetic pattern. Never a cultural child can master the last stage of the operation immediately before the first and second stage. In other words, the introduction of a new cultural operation into a child's psyche breaks down into a number of stages, internally connected with each other and passing one into another [14, p.150].

The peculiarity of cultural development is that the child comes to the realization of a sign (for example, his gesture) last. The meaning of the sign and its function are first created by the objective situation and then by the people surrounding the child. A sign (for example, an index gesture) earlier starts to indicate with a real movement what is understood by others, and only later becomes an indication for the child [14, p.144]. The fundamental conclusion from this is that cultural development goes not to socialization (as in J. Piaget) but to individualization, to transformation of social relations into

mental functions [14, p.146]. If at the beginning of the development there is a case independent of a word, at the end there is a word that becomes a case. A word that makes a person's action free [73, p.90].

According to A.N.Leontiev, ontogenesis of psyche is determined by its phylogenesis, as a result of which, in order to realize the achievements of phylogenetic development in his ontogenetic development, a man must master them. Only as a result of this process an individual is able to express in himself truly human nature. I.e. those properties and abilities which represent a product of social-historical development of man [13, p.114] [68, p.188].

This means that the human development situation reveals its peculiarities from the very first stages. The main of them is the culturally mediated nature of a child's ties to the surrounding world [98, p.215] [68, p.206]. From this point of view, the psyche as an infrastructure does not exist outside the social superstructure. And the process of development is a "top-down" movement [100, p.150].

The top-down ontogenetic development is also the result of interiorization. I.e. at the expense of transformation of external (subject) actions into internal (mental) actions. The necessity of interiorization lies in the fact that the central content of a child's development is appropriation of the achievements of historical development of mankind, which, from the point of view of A.N.Leontiev, cannot be achieved by any means other than by interiorization [13, p.128].

Interioration has a special place in ontogenetic development. Interioration of actions is a gradual transformation of external actions into internal, mental ones; there is a process which is necessary for ontogenetic development of a human being [3].

The individual is born with needs. But need as an inner force can only be realized in activity. Initially, necessity acts only as a condition, as a prerequisite for activity. But as soon as the subject starts to act, its transformation takes place and necessity ceases to be what it was virtually, "in itself. The further the activity develops, the more this precondition transforms into its result [98, p.205].

Interioration of actions, i.e. transformation of external (subject) actions into internal (mental) actions, is, in fact, a process of development, the content of which is appropriation by a child of achievements of historical development of mankind [13, p.128].

The internal scheme of development is based on the proactive development of the subject content of activity, which determines the development of mental reflection, which in turn regulates the activity in the subject environment [98, p.143] [93, p.85].

According to A.N.Leontiev, when the issues of development or activity formation are solved, it is enough to stay within the age definition through leading activities. But if there is a question of sources of change of leading activity, then there is a need to expand the scope of age description through leading activity and move to a more general context. Then it is necessary to consider the child's communication with the world around him or her, the system of relations, the child's place in the system of social relations, the child's attitude to his or her place in the system of social relations and so on. [3].

The formation of new activities is connected with the mechanism of the emergence of new motives, with the "shift of motivation to the goal": actions, becoming more and more enriched, outgrow the range of activities that they implement, and come into conflict with the motives that gave rise to them. As a result, the goal becomes a new motive, generating new activities [3].

In terms of activity theory, the analysis of critical ages is difficult due to the fact that researchers have almost always focused on the mechanisms of formation of leading activities that determine development in stable periods. The mechanism of activity change remained at the periphery of research interests [3].

In A.N.Leontiev's works the stage of personal development (mental development) is defined by two moments: a place of the child in the system of social relations and the leading type of activity. Comparing the definitions of age, we will see that in the first case, age is determined by the relationship between the social situation of development and new formation (the structure of consciousness), and in the second - by the relationship between the child's place in the system of social relations and leading activities. Thus, if in L.S.Vygotsky's cultural-historical theory we are talking about the ratio of internal and external factors, in A.N.Leontiev's theory of activity we are talking about the ratio of two external factors, because neither place in the system of social relations nor activity is an intrapsychic form, a subjective characteristic proper [3].

According to D.B.Elkonin, the mental development of a child is carried out in the process of a natural change of types of leading activity, when each such

type corresponds to its own mental neoplasms [12, p.11]. Growth and maturation of the organism are the conditions of mental development. The sources of mental development are the social environment (ideal forms), i.e. that which development should come to the end. As a form of mental development is appropriation (assimilation). As the driving forces of development is the contradiction between appropriation of the subject and the public side of the action [12, p.10].

This contradiction is expressed in the fact that a child approaches each point of his or her development with a certain discrepancy between what he or she has learned from the system of human relations and what he or she has learned from the system of human relations. Periods when this divergence is of the greatest magnitude are called crises, followed by the development of the side that was behind in the previous period. But each side prepares the development of the other. This is the general law of child development, D.B.Elkonin called it the law of periodicity [12, p.59].

P.Y.Galperin is characterized by the greatest consistency in assertion of cultural-historical ideas. It is his point of view that most fully expresses the essence of cultural-historical ideas in psychology. Unlike L.S.Vygotsky and A.N.Leontiev, he categorically excluded any possibility of biological (physiological) component in human psyche. He considered that all human psyche is appropriated as cultural-historical product and that all human psyche is an external phenomenon. In this connection, he repeatedly criticized any attempts to find psychic mechanisms in physiology (including by A.N.Leontiev) [81, p.160].

V.V. Davydov considered that the main process characterizing the mental development of a child is the process of appropriation of the achievements of previous generations [110, p.4].

In his opinion, the basis of mental development is the change of type of activity which determines the process of formation of new mental formations [111, p.58].

Each stage of mental development is characterized by a certain, leading at the given stage, attitude of the child to reality, certain, leading type of his/her activity. A sign of transition from one stage to another is change of the leading type of activity, leading the child's attitude to reality [111, p.58].

A characteristic feature of V.V.Davydov's position is his position that in the process of a child's mental development the natural-historical logic of ascent

from the abstract to the concrete is reproduced in a specific way [88, p.126].

Like all representatives of cultural-historical psychology, V.V.Davydov believed that development as self-development is inherent only in society, which forms the individual psyche. Therefore, the individual psyche changes on the basis of other mechanisms, rather than on the basis of mechanisms of self-development. According to V.V.Davydov, an individual is not such a self-sufficient system. In fact, he is only an element of a truly integral system, which the society represents. Only society is characterized by development as self-development. Self-development is not inherent in a person taken by himself [112] [113, p.42].

The functional ("horizontal") nature of cultural development

L.S.Vygotsky considered that the nature of the higher mental function can be revealed only as a result of the special genetic analysis. The subject of such analysis should be the processes (instead of things) and causal relations and relations (instead of separate external features) [14, p.100]. L.S.Vygotsky's concept is based on a hypothesis that in each age period of development the consciousness represents a special structure of mental processes. Proceeding from the fact that one of these processes during the corresponding age is the leading one, the subject of genetic analysis for him became the age period of development of the corresponding mental process (for example, thinking) [12, p.21].

The criterion of age periods is a specific neoplasm that represents such mental and social changes that first appear in a given age period and that determine the entire course of development in a given age period [29, p.248]. In each age period, development is determined by the relationship between the child and social reality. This relationship is formed at the beginning of each age period and represents the social situation of development for a given age period [29, p.258]. Therefore, absorption of any new operation is the result of the development process within a certain age [14, p.150].

Each age, each age period has its own structure, which represents the internal structure of the development process [29, p.256]. The driving forces responsible for changing social situations of development ensure the development of the child throughout the whole age period and ultimately lead to the destruction of the previous social situation of development. This leads to the end of a given developmental epoch and the transition to the next age epoch [29, p.260].

The analysis of texts of L.S.Vygotsky himself and his followers testifies that the subject of research in cultural-historical psychology was only one of two main types of development. Such development is understood as a change of psyche within the limits of each concrete age and represents a functional development ("horizontal" type of development). The "vertical" type of development, understood as a transition from one age to another and the mental mechanisms of this transition in cultural-historical psychology have not been specifically considered.

Imitation as a mechanism for functional development

Believing that cultural development has a double determinacy, L.S.Vygotsky concluded that the learning of any new form of cultural experience depends on the prehistory of the development process. He believed that the subject of learning cultural experience is the organism that assimilates this experience depending on the stage of mental development. This means that the assimilation of any new cultural form is the result of the prehistory of the development process, expressed in its actual level of development [14, p.149].

According to L.S.Vygotsky, assimilation processes are provided by the imitation mechanism, which is of special importance for cultural development [14, p.131]. Imitation is one of the main ways of cultural development of a child [14, p.131]. Imitation is the basic mechanism of development of his personality [14, p.143].

The main ways in which a child's cultural patterns of behaviour can emerge and develop are imitation in a cooperative environment with an adult [2].

Unlike J.Piaget, L.S.Vygotsky did not consider imitation as a form only of sign-symbolic activity, but considered it as a mechanism through which any social experience of mankind is learned [79, p.68]. Imitation is the main form in which learning affects development. Learning is to a large extent based on imitation. That is why the zone of immediate development, which defines the area of possible changes in a child, expresses the unity of learning and development [83, p.250].

Imitation, which had a rational form in the cultural-historical concept of L.S.Vygotsky, in A.N.Leontiev's activity concept took a direct sensory form and became related to the cultural form of the object. A.N.Leontief's assimilation was understood as reconstruction in activity of properties (relations) of its subject. It is in such a reconstruction, adequate to the object, that its sensual image and then the notion of the object are initially constructed.

In the activity conception of development, the reconstruction of the object by means of assimilation began to be considered as the activity mechanism of appropriation [82, p.30]. Later the idea of objectivity and assimilation as a mechanism of attribution led A.N.Leontiev to the appropriate understanding of the meaning and ideal form [82, p.31].

Imitation is manifested by following an example, a pattern, by reproducing it. Imitation is especially important in the process of individual development of a person [97, p.150]. The most important role of communication in the mental development of children is that under conditions of communication, a child gets an opportunity to observe the activity of an adult, where he or she discovers role models [114, p.28] [115, p.106].

L.S.Vygotsky believed that a child can go far beyond what he or she is capable of in independent actions when imitating other actions [91, p.263]. In this connection, it is possible to speak about coexistence of two logics in the course of formation of subject actions: logics of performance of action "by value" (performance of the general scheme of the use of an object which develops as imitation of the way of action shown by the adult) and logics of operational mastering of a sample of action. The first can be called the logic of detecting the way of action as a special reality of value, and the second - the logic of its implementation [82, p.73].

The essence of human imitation is the ability to imitate "according to the represented pattern". The essential feature of imitation on the represented sample consists that as support acts not any stimulus, and the fact of coincidence of recreating action with recreated representation of the set sample. Thanks to this, the imitation acquires a new function, which consists in the fact that in a child, unlike an animal, the imitation is able to go beyond and create newstyles, to form completely new types of actions [13, p.126]. The prehistory of age development determines the process of functional development.

A priori knowledge as a condition of imitability

It is believed that upbringing affects a child's mental development only when two conditions are met. 1. The carer should know the place of the child in the system of his relations with adults and other children, and 2. The educator should know the level of the child's formed appropriation activity [16, p.147]. These two factors should be known because the child cannot perceive and assimilate independently what he or she does not yet have the necessary

schemes of action. Mental development just goes along the line of formation of these schemes [72, p.153].

These circuits arise through imitation. Moreover, everything that a child cannot do independently, but what he or she can learn under the guidance or in cooperation with the help of leading questions, L.S.Vygotsky referred to the sphere of imitation [91, p.263]. With the help of imitation, the child can always do more in the intellectual field than what he or she is capable of doing, acting only on his or her own. But possibilities of his intellectual imitation are not infinite, but naturally change, according to the process of his mental development. To each level of development of the child there corresponds certain possibilities of intellectual imitation [91, p.263].

At the same time, a child can imitate only that which lies in the zone of his or her own intellectual capabilities [83, p.248]. Only that learning in childhood is good, which runs ahead of development and leads to development. But it is only possible to teach a child what he or she is already capable of learning. Learning is possible where there is an opportunity for imitation. Learning opportunities are determined by the area of the child's nearest development [83, p.250].

Imitation is a complex process that requires prior understanding [14, p.132]. Moreover, imitation is possible only to the extent and forms in which it is accompanied by understanding [14, p.133]. The process of imitation itself implies a known understanding of the meaning of the other's action [14, p.132]. A human being cannot simply imitate if he does not understand enough a process or a thought process [14, p.132].

In real teaching practice, this phenomenon manifests itself in the fact that teachers assume that children already have a prior understanding of what they are trying to teach them, and this is a precondition for the emergence of understanding [68, p.210].

Imitation, which is considered in the cultural-historical concept as the *main mechanism of the* holistic development process, is in fact only a mechanism of *functional development*. As a *mechanism of age-related development,* cultural-historical theory considers a non-psychotic *mechanism of maturation*.

Learning as social experience

According to the main provisions of the cultural-historical approach, a person

never starts to think directly "from a fact", "from a blank page". Without initial idea in a head at all you will not see the fact (I.P.Pavlov) [116, p.141]. The man always starts the analysis of empirical facts not with "empty" consciousness, but from the point of view of these or those concepts [116, p.140].

In general, the cultural-historical person acts and produces things according to those concepts, which as norms already exist in society in advance. The man himself does not create these notions, but borrows and appropriates them from social reality [70, p.272].

From the point of view of cultural-historical approach, the specificity of human ontogenesis is that the main role in it is played by appropriation of social experience (sensual and rational) accumulated by previous generations [75, p.92].

The process of appropriation of scientific knowledge by schoolchildren is learning [70, p.368]. In educational activities, a pupil under the guidance of a teacher appropriates scientific knowledge, but, based on its objective nature, the most scientific knowledge does not depend on the actions of the pupil [12, p.145]. Teaching, which is the main factor in the emergence of scientific concepts in a student, is directly related to their learning and memorization [83, p.205].

Scientific knowledge as historically formed content of human experience is generalized and fixed in verbal form. Therefore, learning, understood as conscious reflection, involves the transmission and appropriation of scientific concepts in the form of verbal meanings. Formation of meanings in a child is a necessary prerequisite for learning [13, p.127]. But any scientific concept has two sides: objective (meaning), and subjective (meaning). Therefore, the transfer of a concept to a student (the content of the process of learning) from its psychological side acts as a unity of two interrelated processes: transfer of meanings and transfer of meanings [117, p.21].

The specificity of the cultural-historical concept of learning is that acquaintance with private (concrete) knowledge is preceded by mastering general (abstract) knowledge. Private (concrete) knowledge should be deduced by students themselves from the abstract as from their single basis [16, p.167].

Therefore, it is necessary to start training not by acquaintance of the student with empirical facts, but by mastering such a genetically initial (abstract) concept, which would potentially contain the whole system of possible specific concepts describing the subject under study [118, p.67].

Learning as a universal form of development

The specificity of the cultural-historical process of learning is that at the moment of assimilation the process of individual development does not end, but only begins [83, p.294]. The process of appropriation begins the process of development and is the form in which the mental development of a human being as a social being takes place [13, p.193] [106, p.77] [114, p.17]. The mental development of a human being is carried out through appropriation of all previous social experience (culture), the content of which are sign-symbolic systems [79, p.6] [119, p.137] [111, p.55].

Since learning determines development processes, learning (education) is always ahead of development [83, p.243] [84, p.17].

Based on the leading role of learning, "development from learning" is the main fact of pedagogical activity [12, p.9]. Many domestic psychologists and teachers, following L.S.Vygotsky, still share L.S.Vygotsky's point of view on a leading role of learning in development of psyche [72, p.10].

Teaching is an internally necessary and universal form of organization of the process of development of a child's historical features [111, p.46] [120, p.31]. The result of educational activity, in the course of which scientific concepts are appropriated, is, first of all, a change in the student himself, his development [121, p.45]. Learning (education) is a universal form in which the cultural development of students takes place.

Collaborative learning as an initial form of individual development

The development of the student is carried out in conditions of special activity of assignment of socially specified abilities. From the very beginning, this activity is carried out in conditions of communication of the child with adults. If the subject of the assignment activity becomes an ability as a generalized activity, then education itself as a universal form of development arises [16, p.150].

The content of mental development is qualitative changes occurring in the structure of reproducing activity (for example, in transition from one type of activity to another), and in the structure of assigned abilities (for example, in one type of activity the child assigns the ability to imagine, and in another - the ability to theoretical thinking). The peculiarity of the assignment of abilities is that it is performed by the child only in communication with adults and in joint activity with other children [111, p.47].

To complete an act of development, to do something new child can do on their own only after they do it in cooperation with others. The new mental function (new ability) appears as "individual continuation" of its performance in collective activity which way of organization is training [120, p.31]. - Communication is an obligatory condition of process of assignment by students of achievements of social and historical development of mankind which is initially carried out in the form of joint activity or in the form of speech communication [106, p.196].

The development of the human psyche occurs by assigning historical examples of social forms of activity. Such development is carried out as a transition from external, developed, collective forms of activity to internal, folded, individual forms of its performance. This transition is a process of interiorization, i.e., transformation of the interpsychic into the intrapsychic [16, p.150]. In the process of appropriation, reproduction of cultural ways of activity, the child in communication with people appropriates the riches of the generic human culture and in the process of such appropriation develops as a human being [12, p.8].

In the process of child development, the role of the team radically changes. It consists in the fact that any higher functions are first manifested in the collective life of children and only then lead to development in the behavior of the child himself [14, p.141]. The fundamental role of direct emotional communication with an adult is to assign a child the very need for human communication [12, p.9]. Assignment is possible only in the form of communication, since only the adult is the bearer of cultural images of subject knowledge, social relationships and activities.

According to the cultural-historical theory of L.S.Vygotsky, the processes of education and upbringing do not directly develop a child, but only when they have activity forms and have the corresponding content. Between training and mental development of a man always stands his activity [120, p.37].

Values of material and spiritual culture are appropriated in the course of the child's own activities, reproducing the activities and abilities of earlier living people, through which these values themselves were created and developed [120, p.37]. This process results in a person reproducing historically formed human properties, abilities and ways of behaviour as his own [110, p.4].

In the process of upbringing and training, each person appropriates for himself (turns into forms of his own individual activity) those means and ways of

thinking, which were created in due time by social way, by society [70, p.333]. This or that orientation in specific situations was not initially given to a person. First, corresponding subject actions must be formed, then they are transformed into thought - and only then it becomes possible to "try them on". And these transitions are carried out through learning [70, p.337].

Upbringing and education are aimed at developing certain holistic activities and abilities in children [111, p.49]. Assignment by an individual of historically developed methods of birth human activity is the basis of his or her step-by-step mental development [12, p.8].

A child, on the one hand, develops and forms a special "reproducing activity", on the other hand, on its basis, he or she appropriates (reproduces) various specific abilities. These two processes constitute a universal form of the child's mental development [111, p.47].

Education is always about learning certain ways, norms and rules. Education is not reduced to the processes of learning, but is impossible without these processes, which constitute one of the most important mechanisms of human development. The notion of learning refers both to the sphere of education and to the sphere of upbringing, as it contains essential signs of formation of individual experience in certain conditions of behavior management. In the sphere of upbringing, the teaching of norms and rules, management of their assimilation and application in life depends on the character of reinforcement of actions and motivation of behavior [85, p.30].

Education as the appropriation of cultural forms of activity

The social nature of the human being assumes that in any society every member of the human being from birth assigns certain patterns of abilities and corresponding norms of social activity [90, p.43].

Assignment of socially developed abilities by an individual is a special activity, the objective goal of which is the reproduction of historically developed abilities of the human race in individual abilities [16, p.146].

Human abilities are not simply given to a person in objects of material and spiritual culture, they are only given in them. Assignment is a practical activity of man himself in relation to the objects of human culture. This activity must be adequate to these cultural objects. But such adequate activity is not formed in relation to these objects. A child does not face the social world around him/her one-on-one. To appropriate these achievements to make them their

individual abilities, a person should practically treat these objects through other people, in communication with them. Only in communication can a person learn adequate activity. By its social function, this process is education [106, p.422].

Assigning adequate ways of activity with a socially functioning subject is possible only if the child is included in a lively communicative connection with other people, adults, who teach him or her human methods of using created things and thus form cultural attitudes and norms, including standards of cognitive and other activity [71, p.40]. Therefore, education of the individual cannot be reduced to learning, only to the appropriation of scientific knowledge. Formation of the personality presupposes the development of the process of purposeful education and, consequently, the development of a child's activity by means of enriching his actions, which outgrow the initial circle of their activities [98, p.217].

Development occurs in the process of learning. Therefore, in order to communicate with pupils and students, it is necessary first to master a special system of means and ways of organizing learning activities (a system of signs), which will allow, first of all, to perceive adequately the patterns of actions shown by the teacher during the explanation [121, p.26].

Since by its nature the cultural form of activity turns out to be the result of "twisting" of a psychological tool (sign), the first stage of training (the beginning of "twisting") is a real communication between a child and an adult, in which the adult transmits "stimuli - means" to the child [82, p.18]. Of particular importance for the transfer of activities is the most complex and most important initial stage of activity formation, when the joint activity (communication) represents the action of the child's adult body. Such action only makes sense when it is transferred to the child in the form of possibilities and limits of his or her own action. Orientation of another person's action as a condition of attribution is constructed in the form of transfer of the action to the child by an adult [82, p.111].

There is a special feature of activity formation in primary school. A child who has come to school does not yet have an educational activity. The teacher does everything: he sets the learning task, gives it the full operational-subject composition, offers samples of performance of each individual operation and their order, controls the process of performance of each action and operation and evaluates the performance of the learning task by each student. Formation of a learning activity is the process of gradual transfer of individual elements

of this activity to the student for independent performance without teacher intervention. The teacher needs to develop the operational staff in cooperation with the pupils. In this case, samples of actions are presented to students not as set from outside, but as necessary and mandatory [121, p.53].

The further development of the learning activity is a process of gradual transfer of individual elements of this activity to the student for independent implementation without teacher intervention. However, the question of how to form educational activity in the most rational way and in what sequence to transfer its separate elements for independent performance has not yet been solved [122, p.22]. In any case, the formation of learning activity, first of all, implies that students work out each of the components of learning activity [123, p.22].

Proceeding from the general logic of cultural development, in the system of developing education, first of all, the situation, acquainting the child with the very problem of transition to a new action, demonstrating its advantages in comparison with the previously assimilated action, and secondly, the situation of showing the sample of the integral action [110, p.49].

Later on, any mode of action is first assimilated with the full deployment of all operations that are part of it and if possible carried out materially. That is, in such a way that the correctness of their implementation can be directly observed. In this case, pedantry is necessary. Before one operation is not carried out accurately and in accordance with the rule, it is not possible to move to another. The method of action is assimilated the better, the more complete is the composition of the operations included in it and the more thoroughly is worked out each of them [121, p.51].

At all stages of formation of educational activity "working off" of desirable properties of components of actions: reasonableness, generalization, consciousness, measures of mastering etc. is made. This development can be of different duration, depending on the nature of past experience, its content, volume and quality [124, p.7].

Formation of educational activity is understood as the formation of the child as its subject, as its self-change. Such formation coincides with the child's change of circumstances external to him/her. The real process of change of circumstances is the process of formation of the person as change of human activity, as its self-change. All this allows us to speak about education as a universal form of personality development [16, p.24].

Learning (education) as a way to create a zone of proximal development

The internal connection between learning and development is expressed in the concept of the "zone of proximal development". Hypothesis of L.S.Vygotsky assumes transition of one to another [12, p.39] [120, p.31]. Learning and development do not coincide directly, but represent two processes that are in complex relations. Learning is only good when it goes ahead of development. Then it awakens and brings to life a whole range of functions, which are at the stage of maturation, lying in the zone of the nearest development. This is the central role of learning in development [83, p.252].

Learning processes awaken the child's internal development (maturation) processes, awaken in the sense that they bring them to life, let them come to life, give birth to these processes. Learning creates a zone of immediate development [125, p.132135].

According to L.S. Vygotsky, learning is not based on mature processes, but on mature ones. The whole area of ripening processes is covered by the zone of the nearest child development. Optimum terms of training are established in each age zone of its nearest development [91, p.266]. If scientific concepts are defined by the area of development not yet passed by the child, if the assimilation of a scientific concept runs forward (runs in such an area where the child has not yet matured the corresponding opportunities), then training in scientific concepts can play a huge and decisive role in the mental development of the child [83, p.264].

The idea of the zone of the nearest development is unity of the natural and cultural stage of development [83, p.267].

Learning in the cultural-historical concept refers to the process of assigning cultural subject experience to students, beginning with assigning an extremely abstract concept. Education in the cultural-historical concept refers to the process of appropriation of cultural activity experience by students, beginning with the appropriation of actions and compilation of cognitive activity structure from them.

Assignment, carried out in teaching (upbringing) by means of interiorization, is the transformation of the interpsychic into intrapsychic, transformation of the zone of the nearest development into the level of actual development, which is the essence and course of psychological changes of the child's development [2].

Signal intermediation as a mechanism of interaction between ideal and real forms

From the point of view of cultural-historical approach, the "inner" man as a whole, as a way of his existence, is found in mediating. The essence of mediating as the origin of the whole in the transitions between the present, the past and the future [111, p.109].

The time field created for the action with the sign stretches not only backwards, but forward as well. Anticipation of the subsequent moments of the operation in a symbolic form allows you to include in the cash operation special stimuli, whose task is to present in the cash situation of the future action and actually implement their inclusion in the organization of behavior at the moment. Inclusion of symbolic functions in the activity leads not only to the lengthening of the operation in time, but also creates the conditions for a completely new nature of the relationship between elements of the present and future. Actually perceived elements of the present situation are included in one structural system with symbolically represented elements of the future, creating a completely new psychological field of action, leading to the appearance of the functions of the formation of intentions and pre-planned targeted action [73, p.49].

From this point of view, gun and symbolic activities represent different ways of human existence. Since the nature of the instrument and the sign are different, these mediating activities are different as "external" (having an object) and "internal" (having an object of its own behavior) [14, p.90].

Psyche, understood as the "internal" activity of behaviour mediating, draws its tools (signs) from the culture, which is considered as a system of artifacts representing an individuu al reality [68, p.167].

A mark is a natural object that embodies a social purpose and a social function and thus gains meaning. This meaning is its ideal form [68, p.141].

According to L.S.Vygotsky, the ideal form exists as a culture, acts (determines behavior) as an element of culture (as a sign). By means of this sign, natural forms of behavior are reconstructed and objectified, as if independently of the acting person. A human being possesses his or her behavior, giving birth to cultural forms [82, p.15].

In the school of L.S.Vygotsky the meaning was understood as a generalized reflection of reality arising from the action with this reality [82, p.41].

According to A.N.Leontiev, behind the values lies a system of operations (actions). From this point of view, the value represents a way of realization of operations (actions). Therefore, the study of L.S.Vygotsky's values as a reality of concepts is, in fact, a study of operations (actions) [100, p.146].

To master the meaning of a cultural object (sign) is to master the way of possible action with a cultural object (A.N.Leontiev). In the broad sense, the meaning can be understood as an ideal form of existence of the subject world, socially expressed attitude to it [126, p.173].

The social environment is the source of all the specific human characteristics acquired by the child. It is the source of the child's cultural development, which is carried out in the process of real interaction between "ideal" and available forms [91, p.265]. According to L.S. Vygotsky, in the child's development, the ideal form already exists and interacts with the real form. This position was shared by all representatives of the school of L.S.Vygotsky [82, p.13].

The transformation of natural forms of behavior into cultural ones does not occur in a natural, evolutionary way as a result of organic maturing. The formation of human behavior proper is possible only in conditions of interaction of an individual with ideal forms in specific social and historical conditions of his life [2].

According to the cultural-historical theory of development, its highest and final forms are objectively set in ideal form as social models. From this point of view, the process of mental development occurs "from above", through the interaction of the ideal form and the developing process. This presupposes the necessity of the relationship between the child and society and, consequently, a special process - appropriation. In the course of attribution, the child will master the content of the ideal form. Assignment of the ideal form is a universal form of mental development [12, p.29].

L.S.Vygotsky and all his followers tacitly assumed that the ideal form (objective meaning) exists in the form of images of perfect ("correct") ways (samples) of human behavior. Any implementation of these methods in real ("material") conditions and actions is no longer ideal [82, p.35].

In the process of assignment (development), objective values acquire personal meaning, which makes it possible to carry out the process of their assignment [93, p.145]. The system of objective links of the world, represented in the objective values (*Shmelev*), is reflected in personal senses [126, p.178].

A.N.Leontiev has shown that reality of meanings are sensual images which represent the universal form of mental reflection generated by subject activity of the person. But in man sensual images acquire meanings which become the most important "forming" of human consciousness [98, p.175].

According to L.S.Vygotsky, cultural development is carried out as an interaction of real and ideal forms as a result of a sign mediation [82, p.13]. Thus, the implementation of cultural development is the initiation of an ideal life into a real existence. Mediation is a universal method (mechanism) of cultural development [82, p.102].

The main provision of cultural-historical psychology is that the true sphere of mental life is not a special autonomous inner world, but a subject action. At the same time, the "inner" form of the subject action (mental activity) is the apparatus of its "outer" form. This point of view is the opposite of another one, which asserts the autonomous nature of the "inner" (mental) world in relation to the "outer", substantive world. It initially proceeds from the separation of the "outer" and "inner" worlds and is expressed in the principle of "unity of consciousness and action" connecting them (S.L.Rubinstein) [81, p.165].

In cultural-historical psychology action (activity) is understood as a subject action (subject activity), the main and initial form of which is its directly sensory, "external" practical form. Its "internal" form (mental activity) is a derivative of the "external" form of the action, generated by the activity of mental reflection [98, p.244].

The main idea of L.S.Vygotsky's doctrine is that the "internal" (mental) form of action is modeled on its "external" practical form [90, p.25]. It means that the "inner" (mental) form of a subject action is mediated by its "external" form. The mediated human psyche is the main methodological position of cultural-historical psychology. In this case, the mediated psyche as an "internal" form of the subject action of its "external" form means the "external" nature of the human psyche. It means that only physiological processes take place inside (in human organism, in human brain). There is no psychic activity in the sense of higher psychic functions and there cannot be any. The higher psychic activity (unlike the psyche as a reflexive activity of the brain) is by its nature "external" activity [81, p.163].

The "external" (practical) and "internal" (mental) forms of the subject action are not opposed to each other. They represent an organic unity: one as belonging to the world of extension, another as belonging to the world of

psyche [100, p.138]. The "external" and "internal" forms of the subject action have the same structure, common structure. Their common structure is one of the most important laws of cultural-historical psychology [98, p.152].

The commonality of "external" and "internal" structures of subject action means that mental activity is patterned after the "external" form of subject action, and is its special kind. It is included in the "external" form of the subject action, is a factor that manages and organizes its "external" form. Mental activity borrows its own possibilities from the "external" form of the subject action (in particular, the possibilities of gun-mediating), depends both on the function and development from the place in the structure of this "external" form of the subject action [89, p.27].

In cultural-historical psychology it is accepted to consider that genetically initial and basic form of subject action (subject activity) is its "external", sensual-practical form [98, p.145]. It means that the real meaning of the principle of objectivity consists in the fact that consciousness (psyche as a whole) does not have its own structure, its own internal integrity, its own logic of development besides the structure, integrity and logic of development of the "external" form of the subject action (subject activity), the "internal" form of which psyche (consciousness) is [81, p.29].

Signal intermediation as a mechanism for the determination of reflection activity

From the point of view of cultural-historical psychology, the real basis of human personality lies not in genetic programs laid in it, not in depths of its natural inclinations and impulses and even not in knowledge, skills and abilities acquired by it, but in that system of cognitive activity which is realized using these knowledge and skills [98, p.202]. In the conditions of learning, any externally given concept (an objective ideal form of a subject) is formed as an "internal" concept to the extent that it results from students' own cognitive activity [76, p.35]. To the extent that it determines the independent cognitive activity of the student.

In the conditions of upbringing, in the process of appropriation of an objective ideal form of the universal human activity, the child should carry out cognitive activity adequate but not identical to it [98, p.4]. This becomes possible only when the cultural ideal form acts as a determinant of the cognitive activity of the child. Assigning cultural patterns of social activity, mastering them, being capable of their implementation and creative transformation, in other words,

becoming a subject of cognitive activity - means to treat cultural patterns (ideal form) as determinants of cognitive activity [97, p.250].

From this point of view, subjectivity as an "internal" quality of a human being, which cannot be detected as a result of observation of his "external" behavior, which represents his essence, his way of existence (L.S.Vygotsky) is cognitive activity, the determinants of which are the sign and its meaning [82, p.15].

Subjectivity takes place only when, for the human being himself, the transition from the natural to the cultural form of his behavior is objective, given as the subject of his cognitive activity. The means of such objectification is a sign, which acts as a determinant of his cognitive activity and thanks to which a person becomes capable of taking his behaviour outside himself and fixing it outside as an object of appropriation and transformation [82, p.16].

The person generating his or her behavior as a result of assigning an ideal form is his or her subject [82, p.15].

Inclusion of the sign (ideal form) as a result of its determination by its value of cognitive activity and its assignment to the initial structure of the action changes this structure and creates an entirely new psychological structure, contributing to the appearance of functions of the formation of intentions and the planned target action [73, p.49].

In the genetic plan the operation of use of the sign is in the very beginning of development of each higher mental function and at first has character of external activity. At the beginning of development the sign is an external auxiliary stimulus, an external means of self-moderation, which turns into an internal means as a result of cognitive activity [73, p.16].

The sign as a social means of determinacy is a "trace" of the past real action of one person in relation to another (help, control, etc.). This action (way of action) implied in a sign is an internal content of its meaning. In this sense, the sign is a means to indicate the way (by which way) the past real action was performed [82, p.22].

Determination of cognitive activity by a cultural object (sign) is possible only if the object makes sense for the person who appropriates it. Only the object that has meaning for me is the object acting as an object of cognitive activity (*A.N.Leontiev*) [126, p.173].

In sign mediation, natural forms of behavior become the subject of change as a result of the determination of cognitive activity by the ideal form (meaning)

of the sign. As a result of mediation, the internal mechanism of which is cognitive activity, natural functions are overcome as natural. As a result, they become artificial, i.e. conscious and arbitrary. This means that a person takes possession of his or her behavior, controls his or her behavior. The sign is a psychological instrument, an object of influence on the structure of behavior or mental process to the extent that it becomes a determinant of cognitive (mediating) activity. The sign is a means of psychological influence on behavior to the extent that it launches cognitive activity as a mechanism of mediating. In this case, it becomes an "internal" means of mastering one's own behavior [2].

Landmark mediation as a mechanism for the determination of cultural development

The essence of cultural development consists in the collision of developed (cultural) forms of behavior that a child meets in a social environment with undeveloped (natural) forms that characterize his or her own behavior [14, p.137]. The social environment is the source of all specific human properties acquired by a child, the source of his or her cultural development, which is carried out in the process of real interaction of "ideal" and available forms [91, p.265].

According to cultural-historical theory, the highest (final) forms of development are not given initially, but only given. They exist objectively in an ideal form as public models. The process of mental development takes place as if "from above", by interaction of the ideal form and the developing process [12, p.29]. Culture already contains in a ready form forms of behavior, abilities, qualities of personality which should arise in a child in the course of his or her individual development. Outside of interaction with cultural (ideal) forms, a child will never develop specific human qualities [2].

The peculiarity of cultural development is that at the very first moment when the initial form of development is formed, its final (ideal) form already exists. It is in this sense that we should understand that the environment does not play the role of an environment, but the source of child development. The interaction (mediating) of the real and ideal form is the internal content of cultural development [3, p.211].

From the point of view of the cultural-historical concept, mental development is a variety of forms of symbolic mediation, "culturalization of nature". [2].

Critical periods (critical ages) are particularly important for cultural

development. The specificity of development at critical age is that at the beginning of a crisis a child opens a new ideal form and its attitude to the real one sets a new social situation of development [3].

The crisis of development is not just a period of change in the social situation of development or of leading activities. It is a special psychological space in which the act of development is performed as a result of the fact that the situation of the action changes and the subject acquires a new vision of the situation of action [3]. The analysis of critical age was carried out by L.S.Vygotsky on the basis of the provision that the structure of transitional age is a reflection of the dynamics of transitions of real and ideal forms. He suggested that the change in the child's experience of the environment, i.e., the emergence of a new impulse for development, is due to the discovery of a new ideal form of development at the moment of age transition. Critical periods are the extreme aggravation of the implicitly existing relationship between real and ideal forms. Crises are the moments of the "phenomenon" of the boundary between the real and ideal forms [3].

L.S.Vygotsky suggested dividing the crisis age into three phases: pre-critical, critical and post-critical. In the pre-critical phase, a contradiction arises between the real form in which he lives and the notion of the new ideal form. In the critical phase proper, the contradiction that has emerged reaches its highest exacerbation. Here, the subjectification of the new ideal form takes place through a probing action. In the post-critical phase, a new social situation of development is created. Here the transition from the "ideal to the real" to the "one's own to the other" is completed (*B.D. Elkonin*). The child takes new forms of cultural transmission of the ideal form (new leading activity). A search for a new "significant other" takes place. A new ideal form is being implemented [3]. Thus, the type of mediating changes.

Sample as a mechanism for the formation of symbolic mediation

In a crisis age, development begins with the mobilization of the most primitive trends, with their natural use. Then begins the phase of teaching, through which, under the pressure of external conditions, the natural mental process changes its structure, becomes complex, cultural. At this time, with the help of a number of external techniques, a new form of behavior is built. At the end comes the stage, when external auxiliary techniques become unnecessary and the organism acquires new forms of behavior [3].

It can be said that at the stage of mobilization of tendencies of natural use an

attempt is made to build new behavior in a non-specific, primitive way. In the phase of doctrine, a conflict arises in the structure of a crisis, which exacerbates the need to transform behavior. The doctrine phase is a transition from conflict to reflexion, which results in the birth (in the postcritical phase) of a new form of behavior [3].

The act of development is carried out by assigning (subject) a new ideal form. Subjectivation requires testing the ideal form in situations that are new in relation to the situations of its appropriation. Before a crisis, all actions of the child are directed towards the subject. In situations of crisis, the focus of action is on the acting one [3].

Ideal form subjectification presupposes maximal expression of the action vector directed at the acting one. Transformation of a subject action from an object action into a subjective one. For an action to become subjective, its performing (practical) vector must be suspended. This is the property of the testing form of the subject action [3].

In the testing action, its effective part is minimized, the person acts without changing the subject of action. This is necessary in order to be able to recreate the sample. If in the full object action two sides are singled out - directed to the object and directed to the acting one, then in the sample as a form of object action the second one is maximally represented, the first one is convolute [3].

Trial action analysis is directly related to the issue of development crises. In a crisis, the moment of feeling of the action, of finding out what it means for the action in question, comes to the fore. This is what ensures subjectivation. The sample becomes a mechanism of subjectivation of the subject action [3].

If one simply recognizes the possibility (or necessity) of destruction of old schemes, it will require recognition that there is a psychological vacuum at the time of destruction. *Avoiding* this is possible only by assuming the emergence of a new reference system, a new "life meaning" (*A.V.Zaporozhets*), in which both the old and the crumbling and the new and being created are presented. This system should become a unifying link of what is happening, preventing a simple dissociation of the links [3].

In a stable period, a full action is built, with both components - orientation and performance part. In a crisis period, an indicative part comes to the fore. At the border of two ages, a new ideal form opens up for the child, what awaits him/her in the next age. This situation is projected on the child's behaviour. The child's actions to build a new behaviour destroy the old situation of the

action. As a result of this destruction, the old situation is revealed. Thus, the discovery of a new situation of action becomes a condition of development in a critical period. Such detection occurs due to the reaction of the action situation itself. It resists destruction [3].

In a stable period there is a real action of the child, ideal forms that set the direction of his development, and some of the mediating links, the means of translating the ideal forms into reality action. The critical period is unique in that it does not have the most connecting link between real and ideal. The relationship between reality and ideal becomes direct. This means that there is no intermediary link, the form of translating ideal into reality [3].

Signal intermediation as a mechanism for assigning ideal forms

Education is that the child should spread the world of spiritual and material culture, reproduce and appropriate the modes of activity that are realized there in an ideal form [127, p.138]. This means that the process of appropriation is determined by the ideal form.

Spreading the culture as mastering the content of an ideal form takes place in the process of learning (appropriation). Assignment is determined by the final forms of development, which are set in an ideal way as public samples and provide interaction between ideal and real forms of the developing process [12, p.29].

The main condition for a child's mental development is his or her mastery of human ways of activity, which are mediated in ideal forms of tools and signs [2].

The child develops in the learning process itself, rather than completing the development cycle. The learning process itself is always in the form of cooperation between the child and adults and is a particular case of interaction between ideal and present forms as one of the most general laws of the child's cultural development [91, p.266].

Learning is a specially organized process of influence on the child, mediated by a cultural ideal form of its individual real form. Learning is a process of organized adult mediating the child's behaviour in a cultural ideal form [12, p.37].

At the training stage, the ideal form is to subordinate the student's activities. Intermediate goals, means, and ways of activity concluded in this ideal form is the central point in formation of the psychological system of activity [77,

p.124]. But the child cannot directly meet with ideal forms of culture, cannot independently discover the purpose and method of use of cultural objects. For ideal forms to reveal themselves in their human content, for it to be possible to join them, an intermediary (a guide, a mediator) is always necessary. For L.S.Vygotsky such mediator is a sign (natural language, artificial sign systems, symbol, myth, etc.). It is through the sign that a cardinal transformation of natural (real, cash) mental forms into higher (ideal, cultural) forms takes place [2].

Ideal form exists as a culture, works as a sign (element of culture), through which the natural, as if outside the existing human being, forms of behavior are reconstructed and objectified. A person, mediating his or her behavior with a sign (an ideal form), seizes his or her behavior, generating it anew [82, p.15].

The values of signs appear before a person and in their independent existence. That is, as objects of his consciousness and, at the same time, as ways and "mechanisms" of awareness. I.e. as means of reflection of objective reality [128, p.147]. In objective meanings the ideal form of existence of the object world, its properties, connections and relations, transformed and coiled up in the sign matter, is presented [128, p.141]. The objective nature of values expresses the fact that values are not created by an individual person. A human being only possesses and assimilates the meanings of cultural objects of his epoch, his society, his nearest environment. He learns what he finds at birth. This, of course, does not negate the fact that the mark is produced by individuals, and each individual can make a small contribution to the development of values. But only this individual contribution is similar to one grain of sand thrown into the Sahara desert [129, p.101].

In the learning process, value is given to the medium, since value cannot be a property of the thing itself. Value is only given in a social (interpersonal) form and cannot happen otherwise. From the point of view of cultural-historical conception, the act of giving importance as an intermediary is the internal content of the whole learning process that determines cultural development [82, p.21]. Mediating as an initial way of "transmission" of an ideal form is an internal learning mechanism [82, p.54].

Conclusions. With the emergence of the cultural-historical man, the structure of reality is divided into its real and ideal forms. The ideal form is alienated from the person participating in joint cultural mediations and is fixed in objective meanings. Ideal form, on the one hand, is a common source of all possible cultural mediations, and on the other hand, a determinant of the goals

of all subject activities.

Having a purpose makes it possible not only to build cultural mediators arbitrarily, but also to anticipate the future results of activities and take responsibility for them. The special specificity of a person as a subject of subject activity is that, possessing consciousness and activity, he or she arbitrarily (purposefully) projects an ideal form on himself or herself, thus becoming a creator and creator of his or her cultural and historical life.

The psychological specificity of the subject activity is determined by the mechanism of target determination and the specificity of the cognitive activity that provides it. Since the target definition is the definition of the cultural past, to the extent that all mental images and processes are the result of past cultural mediations as the future of individual mediations.

From this point of view, the purpose of a subject activity is a projection of past cultural ideal forms into the future of individual subject activity. As with any mental image, the goal is a trace of the cultural past, acting as an expected individual future. In other words, the goal is the image of the past cultural ideal form, assumed in the present as the expected future result of the individual subject activity. The individual future of the cultural-historical person is a social past.

The human being in the cultural system of mediation is determined in a total way. He is a "projection" of the cultural form, which he himself, his own subject activity does not change and within the limits and limits of which he is forced to be and find the opportunity to build his individual life. From this point of view, the development of the cultural-historical person is determined by the cultural ideal form, the determinants of his development he does not build, does not generate through his consciousness and will, and the cultural determinacy of the person has an external nature.

Consequently, within the framework of the cultural-historical concept based on the mechanism of targeted determinacy, the problem of self-development as a result of generation by a person of the determinant of his or her own development is not and cannot be set and, consequently, cannot be solved.

Conclusions on the second section

In both concepts, the psychological determinant of individual development is actually understood as the subjective ideal form. For both concepts, the

question of the origin of the subjective ideal form is central. It is in the question of the nature of the subjective ideal form that the main problem of man as the subject of his own development is concentrated.

"External" nature of the subjective ideal form in the social-reflexive concept of individual development.

In the social and reflexive concept, the possibility of development is conditioned by the adequacy of external causes and internal conditions. But the reflexive development is determined not by external factors per se, but by their significance for a person [23, p.368] [23, p.291]. External causes are social phenomena as the results of previous interactions, while internal conditions are subjective ideal forms as images of possible results of exposure, existing as images of reflection of many influencing social phenomena [130, p.62].

Reflexive development only occurs when the objective form of the cultural object is adequate to the subjective ideal form of reflexive activity. The ideal form has a subjective nature, is inalienable from the human being and does not exist outside and beyond the psyche of real people [130, p.54]. The "Ideal" does not exist outside the head and consciousness of people [130, p.40]. At the same time, having a "geographically" "internal" location in the structure of the brain's reflexive system, the subjective ideal form has an "external" nature by the way of its origin.

The main thing in the reflexive concept of development is that the ideal form as a determinant of reflexive activity is not the subject of human generation, but arises as a result of an involuntary translation of the form of an influencing cause, which is also not the subject of human generation.

Therefore, neither the objective (real) form of the external cause nor the subjective ideal form of reflexive activity become (and cannot become) the subject of generation by a reflexive person, which determines the "external" nature of reflexive development.

"Outer" nature of the subjective ideal form in the cultural-historical concept of development.

In the cultural-historical concept, the possibility of development is conditioned by the adequacy of external and internal ideal forms. The possibility of development is conditioned by the possibility of transformation of an objective

ideal form of a cultural object into a subjective ideal form (goal) of a subject activity.

The specificity of human existence, from the point of view of cultural-historical concept of psyche, consists in the fact that not natural forms of objects (their properties and signs), but their artificial (ideal) forms (objective meanings) act as the purpose of subject action of cultural-historical man. The significance of a cultural object for a cultural-historical person is that determinant factor, which determines the mental determinacy (motivation) of cultural development [131, p.219-227].

Cultural development is determined not by the objective meaning of a cultural object in itself, but by its significance for human beings (meaning). What is significant for a person (meaning) is that cultural object which is adequate to its subjective ideal form (purpose). Thus, meaning is the relation of adequacy of the objective and subjective ideal forms. As determinants of cultural development is the cultural object that makes sense for a person. Thus, the problem of cultural development is reduced to the problem of origin of subjective ideal form of subject action.

The main thing in the cultural-historical concept of development is that the ideal form as a determinant of the subject activity is not the subject of generation by man, but arises as a result of an arbitrary translation of the ideal form of culture, which is also not the subject of generation by a developing person.

Therefore, neither the objective ideal form of culture nor the subjective ideal form (goal) of the subject activity become (and cannot become) the subject of cultural-historical person's generation, which determines the "external" nature of cultural development [88, p.123].

3. CREATIVE INTERMEDIATION AS A MECHANISM FOR PRODUCING "INTERNAL" DETERMINANTS OF SELF-DEVELOPMENT

3.1 The individual as a subject of production of "internal" determinants of self-development

3.1.1 "Internal" nature of the human being as a subject of self-development

The human being as a source of own development (self-development)

The classic solution to the question of the attitude of man and society is the acceptance of society as an external source of human development [132. p.37-50]. The empirical basis for such decision is the social practice, which testifies to the subordinate, derivative character of human existence and subordinating to its laws, producing the character of total society existence.

As it follows from both concepts (for example, K.A.Abulkhanova-Slavskaya [41]; A.N.Leontiev [94]), due to the scale of total society, due to the rapid renewal of social reality, a person in it is given the role of a statistical unit, the meaning of whose existence is participation in large-scale social changes, but whose personal contribution to social change is insignificant because of the scale capabilities of a giant society.

The life of total society is subject to the statistical law of large numbers, and therefore, as society develops, a person is less and less able to influence the social reality, he is increasingly alienated from impersonal society. The sense of individual existence of man is increasingly imitating spontaneous social patterns and less and less the creator of these patterns.

But this social dynamic, the signs of which are increasingly visible in our modern lives, is in fact not the only possibility. As K.Marx has shown, the tendency to suppression by total society of an individual person arises as a result of alienation of products of individual activity from the manufacturer of these products - a person. In this case, it is not the person producing social products who determines his or her existence, but the alienated products of his or her individual activity, turned into social norms, become determinants of individual existence [133, p.81-93.] [134] [135, p.5-12.].

The nature of the social way of existence is expressed in the tendency of the

social system to stability, to globalization, to reproduction, to self-recovery and reproduction. The human being in a social society is in contradiction between his creative essence as a historical being and the adaptive concrete-historical social form of existence imposed on him [16, p.77].

In our time, this contradiction has escalated to the limit, generating previously unknown negative social phenomena and, in fact, has become an internal source of destruction of the very social mode of existence. This happens because man is not a concrete social being, but a universal being capable of generating and overcoming any form of sociality [16, p.75] [16, p.76]. From this point of view, a *social person* has an "external" nature, which is the products of past social activities alienated from him, acting as social models for future generations. To the extent that a person is able to go beyond a particular sociality, he is so universal [16, p.74]. The *universal human being* has "inner" nature, which is expressed in the generating activity, the product of which is himself.

The "inner" nature of man is conditioned by his historical destination, his special position and his special role in the history of the development of nature and culture [136. p.133].

But this special role of man and the specificity of his existence can be discovered only by means of an appropriate method. This method can become a historical method, the global subject of which is nature as a subject of its own historical development. The historical method considers history as a process of transformation of historical forms of culture into each other, and as a source of such transformation considers the generating activity of man. From the point of view of the historical method, a human being is a universal being capable of transformation from one historical form to another as a result of his or her generating activity.

From the point of view of the historical method, the subject world as a subject of self-development is a historical whole developing at the expense of its own internal sources. The history of self-development of the subject world is a sequence of transitions from one type of integrity of the subject world to another type of integrity.

On this way the subject world goes through several "critical" periods (periods of "vertical" development, periods of new quality of integrity) and several "personal" periods (periods of "horizontal" development, periods of new quality of integrity). Lithic periods correspond to the *periods of formation of*

the types of the subject world. Critical periods correspond to the ***periods of formation of*** new types of the subject world.

At each transition to a new type of integrity, the mechanisms of origin and formation that provide it are developed. Transition arises as a way to resolve the internal contradiction. Since any development is the transformation of possibility into reality [137, p.270] [137, p.271], the self-development should take place, first, as a "production" of new possibilities and, secondly, as a transformation of new possibilities into a new reality. In the prehuman reality of the subject world, the emergence of a new possibility and its transformation into a new reality, i.e., self-development, occurs involuntarily, spontaneously.

With the emergence of man, the history of nature is created by man and becomes the history of his own development. Human ontogenesis is an individual form of historical development. With the appearance of man the involuntary and objective character of the development of the subject world changes into an arbitrary and subjective one [138]. The meaning of human life is to become the center of transformation of natural forces into conscious ones, to be a source of continuous improvement of life [56, p.406].

The universal man is an internal source of self-development of nature, expressing its creative essence, providing its self-development through continuous construction of the universe [139, p.38] [149, p.333].

To create an image of such a person, we need psychological concepts in which a person is considered an internal source of natural, cultural and social systems. Such a task can not be solved by either concepts that derive the essence of man from natural nature, or concepts that derive the essence of man from the natural, cultural or social system of society [97, p.17].

To create an image of a creative person, we need concepts of a new type, considering the human being as a force that generates itself and the whole "external" integrity of nature, society and culture [142]. Such a concept could be Marxism, since the true goal of K. Marx was the spiritual emancipation of man, the liberation of his economic dependence, the restoration of his personal integrity, which was to help him find the way to unity with nature and other people. In fact, K.Marx's philosophy was aimed at the full realization of individualism. That is, the goal that guided all Western social thinking from the Renaissance and Reformation until the mid-19th century. [142, c.377].

The creative person [143] has a special position and role in nature, as opposed to all other objects and phenomena of the natural world. If all other objects as

parts of nature are "external" phenomena of the "internal" sources generating them, then the creative person is "inside", is an "internal" force generating himself, objects and phenomena of the subject world due to the fact that he is "embedded" between reality and possibility of the subject world. Through this special position of the creative person, the objective world acquires a new ability - arbitrariness. Once the creative person has produced the historical world of objects, he or she becomes capable of producing his or her new possibilities with his or her hands. Such world can be renewed only from within a person [144, p.482] and only a person himself, not someone or something outside him, can give meaning to his life [145, p.176].

Subjects-object (cognitive) reflexion as a mental mechanism of the "horizontal" (functional) vector of development

The creative person is the subject of generating the possibilities of the subject world as his own. Thanks to the creative person, the subject world begins to relate to its possibilities and becomes a reflexive reality in itself, i.e. a subject [6, p.11] [146, p.48]. Since the attitude to one's own abilities is arbitrariness, the nature of arbitrariness as an ability to produce new abilities lies in reflexion [147,

p. 152]. Reflexion is the central "internal" phenomenon of man [139, p.136]. It is the central phenomenon of human subjectivity, of the human inner world [97],

c. 78]. Since the problem of the emergence of reflexion is simultaneously the problem of the emergence of consciousness [97, p.139], the boundary separating man from animals and all other objects and phenomena of the subject world is reflexive consciousness [97, p.18].

Nowadays, in psychology reflexion is understood as the ability of consciousness to concentrate on itself, to make itself a subject with its own specific stability and its own specific meaning. It represents the ability not only to cognize but also to know oneself. Not just to know, but to know what you know [139, p.136]. Reflexion in its traditional philosophical and psychological sense is the ability to take a position of an "observer", "researcher" or "controller" in relation to one's actions, thoughts [148, p.10]. From the social and psychological point of view, reflexion is the ability to take the position of a researcher in relation to another "character", his actions and thoughts [148, p.10]. From the cognitive point of view, reflexion is not only the activity of

producing knowledge, but also the activity of reproducing a thinking individual as its subject [149, p.83]. Reflexivity means the consciousness of reflecting (knowledge, understanding) the content of the present phenomenon of subjective reality - the image, experience, inner motivation, subjective symbolism, etc. [130, c.85]. The highest form of reflexion is the one as a result of which a person can not only "rise above" biological, mental or social determinants, but even overcome himself [150, p.11].

The psychological content of reflexion is such a subjecttooobject (cognitive) relation [23, p.410], in which the subject coincides with the object [151, p.277]. However, as a result of cognitive *reflexion, a* person is unable to change either the object of his or her knowledge or himself as a knowledgeable and cognizing subject. On the other hand, a cognizing person is able to improve his or her abilities and, thus, to perform "horizontal" (functional) development. There are two types of human existence associated with subjecttobject reflexion. If reflexion is "external", then the human being is as if "inside" life and his or her existence does not go beyond the bounds of direct links and relations. All his or her relationship is the relationship to separate phenomena of life, not to life as a whole. The "external" reflexion forms a phenomenal layer of individual consciousness consisting of the products of collective consciousness realized as the content of its "self" [97, p.200].

If reflexion is "internal", it interrupts the continuous flow of life and leads a person beyond its limits. The appearance of "internal" reflexion is connected with the value reflection of life. This way of existence consists in severing direct connections and relations and restoring them on a new basis. It is in this way that the problem of knowing one's own consciousness as a problem of new conscious experience (experience with consciousness) first appears [97, p.200].

Reflexion is the main human ability, a specific and fundamental mechanism of the human way of life [97, p.200]. Therefore, the problem of reflexion is the problem of defining one's way of life [97, p.200]. Reflexion as a subjecttobject relation represents a mechanism of transformation of a human being as a subject of cognition of the way of existence of an object into his own way of existence. In this case, the human being borrows the possibilities of his existence in the reality of the existence of the object-nature and by his activity again transforms them into the reality of the existence of the object-nature [136, p.133].

A person acts as a subject of cognitive activity, "built in" between the

possibility and reality of the total object of nature, and its activities forming it and formed by the generalization and improvement of objective possibilities available to the object. The way of such a person's existence is subjecttobject (cognitive) reflexion, and the meaning of existence is to become the ontological center of the world, transforming the natural forces into conscious forces necessary for the harmonization of initially spontaneous and non-spontaneous nature as a result of its rationalization (S.L.Rubinstein).

The fundamental way of being human as a subject of cognitive activity is to adapt to the object nature by learning its objective essence and transforming it into its own subjective essence. Man as a subject of cognitive activity is able to produce knowledge about the object nature, on the basis of this knowledge he is able to reproduce the forms of existence of the object nature, reproduced as a cognizing subject. The Man is able to reproduce (recreate) object nature according to its own laws, is able to make these objective laws the laws of its existence, is able to reproduce as a subject of cognitive activity. But as a subject of cognitive activity, as a subject of cognition he is unable to produce new forms and contents of nature [46, p.411] [46, p.412]. Such a person is not capable of being a source of nature's development, is not capable of fulfilling the historical mission of being an inner force ensuring self-development of himself, society and nature.

Subjective (creative) reflexion as a mental mechanism of "vertical" (age) vector of self-development

Since a person within the framework of the subject-object scheme is always limited to an object and is not a subject of generating his or her new possibilities; since he or she precedes and appropriates his or her possibilities in an object that opposes him or her and takes them as a result of a cognitive (subject-object) relationship, the theory of reflection cannot be used as a theoretical tool to solve the problem of self-development (the problem of a person as a subject of his or her own possibilities) [136, p.156]. This problem must be radically rethought and changed from a subjectttoobject to a subjecttoobject reasoning scheme.

First of all, this means that the subject world must be seen as a subject of its own history, as a subject of self-development. From this point of view, the subject world should be understood as a historical subject world, as an evolving holistic natural reality, as a history of changing types of the natural world.

The development of the subject world is carried out as its self-development as

a result of self determination. It means that the subject world in its history acts as a subject of self-development. It occurs in the direction of two vectors: in the direction of production of new possibilities and in the direction of the vector of formation of new reality.

The vector of new possibilities (vector of "vertical" development) is a vector of "production" of forms of the subject world. The vector of new reality formation (the vector of "horizontal" development) is a vector of "remembrance" of new possibilities in the process of production of new reality of the subject world.

The vector of "vertical" development expresses the subject- subjective attitude, the essence of which is the genesis of forms of the developing subject world. Ability of the subject world to genesis is expressed in a person's ability to self-development. The mechanism of selffdevelopment in ontogenesis represents the unity of historical and creative reflexion, which arise, develop and form in the conditions of self-education of a person as a subject of his own possibilities. As a result of historical reflexion, and as a result of creative reflexion the boundaries of cognition and existence possibilities are overcome [118, p.21]. Creative reflexion is a way to take a productive approach to the world and to oneself. Thanks to creative reflexion, a person becomes capable of overcoming himself/herself [150, p.11]. As a result of creative reflexion, which is responsible for "vertical" development, self-development takes place, i.e. a person turns from one historical form into another [97, p.364].

3.1.2 The nature of the creative person mediated by the historical future

Intermediation as a way of the existence of the subject world

Human nature is determined by the nature of its determinants. The adaptive human being is determined by the social (cultural) past, which acts as an "external" determinant of its formation ("horizontal" development). The creative person is determined by the historical future, which he or she constructs himself or herself as determinants of self-development. The "inner" nature of the creative person is that he or she creates the determinants of his or her own development, rather than finding them to be naturally present in the "outer" natural, social or cultural world. The creative person's ability to produce the determinants of his or her development expresses the universal essence of the historical subject world and allows the human being to overcome any external and internal limits (i.e., to develop himself or herself).

The creative man is mediated by his historical future. The creative person's "inner" nature is that, firstly, he produces his own future, it is the product of his own creative activity; secondly, the future is the result of constructing the relationship between past, present and future.

The history of self-development of the subject world can be seen as a history of changing forms of its existence. We can talk about four forms of the existence of the world of objects: spontaneous, regular, systematic and historical.

In the prehuman world, existence is the discovery and manifestation of the essence (mode of existence) (Rubinstein S.L.). Discovery and manifestation of the way of existence of one object occurs in the conditions of its mediation by another object. Intermediating takes place in the conditions of interaction. Interaction is the reality of mediating. Intermediating is a mechanism of existence of individual objects and the object world as a whole.

Interaction by its object nature cannot be a mechanism for genesis of objects and relations of a new type. That is why the history of natural forms of the object world is a sequence of established, arisen forms of the object world, characterized by established, arisen types of interactions, carrying out and discovering already arisen entities (ways of existence).

The natural history of the forms of the subject world is the ***history of the formation of*** emerging entities, but not the history of the emergence of new entities. Only with occurrence of the person, the history of the subject world begins as history of ***occurrence***, as history of genesis of new essences.

Past intermediation as a mechanism for "horizontal" development of the subject world

The factor behind the interaction is the cause. The peculiarity of causal mediation is that the cause is the result of past interactions. The property integrating the past results of interactions is the form of the cause. Interaction is a mechanism for integrating the interacting objects by displaying the whole set of interacting objects in each of them. Their generalizing factor is the general form of interacting objects.

The form is both the result and the starting point that allows for interaction. The cause to be perceived must be of the same shape as the object being exposed. Interaction as the transformation of the cause form into a consequence form is formation. The presence of a form common to all

interacting objects, generalized in the interaction, integrates them and makes them objects of one set.

The form acts as an opportunity for interaction. Only those objects that have a common form (common nature) can enter into interaction. Objects that have different shapes will not interact. Past interaction results accumulated in the form determine (determine) future results. The form acts as a "past prototype of the future result of interaction".

But since form as an opportunity for interaction is, on the one hand, a past result of already existing acts of interaction, and on the other hand, acts as a prototype of the future result of interaction, so long as the mechanism of causal mediation is a mechanism of mediating the future result of interaction by the past result of interaction. The present as the actual reality of interaction is the reality of translation of the past into the future.

In the process of development of the subject world, the mechanism of causal mediating is developing. In the natural history of the subject world there are four types of causal mediating mechanism: physical mediating, chemical mediating, biological mediating and social mediating.

Mediation of the future as a mechanism for "vertical" development of the subject world

All four causal mechanisms are mechanisms of past (natural, social or cultural) mediation and act as externally determined and therefore final development mechanisms. They all express neither the creative essence of the historical subject world nor the creative essence of the self-developing person as a source of self-development of the historical subject world.

In fact, all four intermediary mechanisms are mechanisms of formation (mechanisms of "horizontal" development). The problem of modernity is exactly that the object world is between its two epochs of development: between the epoch of involuntary, spontaneous, unintentional development, when transitions between historical forms of the object world were not fixed and inadvertent, but were carried out spontaneously and unintentionally and did not become the subject of special construction. And the era of arbitrary development, when transitions between historical forms of the object world are fixed and mediated in ideal forms of cultural history.

As a way of existence of the historical subject world is creative activity, the mental mechanism of which is creative mediation. Creative Intermediate is a

way of transforming an ideal form of the former subject activity into an ideal form of a new subject activity. The mechanism of such transformation is double: historical reflection, which reconstructs the history of the object culture and formulates the historical logic of the origin of the ideal forms. And creative reflection, as a result of which a new ideal form is created.

Here the mediating of the future is the mediating of the future ideal form of subject activity, which is the product of creative activity.

3.1.3 Creative person as a subject of production "internal" determinants of self-development

The creative person as a subject of production of ideal forms of subject activity

Self-development is the transformation of the subject activity of one historical type into the subject activity of another historical type. The new ideal form of subject activity, acting as determinants of self-development, becomes a psychological means of self-change of individual consciousness.

In creative psychology, a student is considered to be a subject of generating socio-cultural norms rather than a subject/object of their appropriation. This means that in the process of cultural nascent education, socio-cultural patterns are created by students, as their content is defined in a historical way and can only be produced, but not appropriated.

In creative psychology, a person is viewed as a source of origin in the socio-cultural sphere, and his or her psyche is a way of generating ideal forms of social activity. The pupil produces social patterns (norms) by his individual activity. The production of social norms is a function of an individual person as a source of origin and functioning over-individual (social) reality.

In creative psychology, social and cultural patterns act as a subject of creation as a means of solving self-development problems. This means that the student is seen as the subject of creating ideal forms of subject activity.

3.2 Creative intermediation as a mechanism for the production of ideal forms as "internal" determinants of self-development

3.2.1 Creative intermediation as a mechanism for producing ideal forms

As shown above, the causal mediating mechanism and the sign mediating mechanism are the mechanisms of translation and formation of ideal forms.

By their nature, both mechanisms (both causal and sign-mediated) are mechanisms of translation (transmission) of ideal form. As a result of action of both mechanisms the process of formation of "internal" subjective ideal forms (the purposes and personal senses) by means of "external" objective ideal forms as psychological means is provided.

In the case of causal mediation through the mechanism "external causes through internal conditions" ("internal from internal"), internal conditions (subjective ideal forms) serve as a criterion for selection of external objective forming causes and formation becomes possible only in case of adequacy of the form of objective cause - subjective ideal form (internal conditions). This expresses the method of inductive formation, which is carried out in the logic "from single - to universal".

In the case of symbolic mediation, carried out by the mechanism of interiorization ("internal from external"), the criteria for selecting external forming ideal forms of culture are "internal" subjective ideal forms (subjective goals and personal meanings). Formation becomes possible only in case of adequacy of the "external" objective ideal form of culture - the "inner" subjective ideal form (subjective goals and personal meanings).

Despite the considerable difference between the mediating mechanisms and their results, both mechanisms represent mechanisms of translation of ideal forms, the obligatory condition of which is a priori knowledge. Exactly a priori values (internal conditions; purposes and personal meanings) act as the means providing possibility of formation in translation conditions.

It means that due to both of these mechanisms it is possible to realize individual development of only one "horizontal" type, i.e. formation. In spite of the fact that in both cases a priori knowledge plays a decisive role in the organization of individual development (its "horizontal" vector), both in the social and reflexive concept, and in the cultural and historical concept, the origin of the a priori knowledge itself is put out of brackets, the problem of its origin is not actually put or discussed. In fact, it is the most important problem, the solution of which is necessary for the organization of ontogenetic self-development.

Since both mechanisms of individual development provide only a "horizontal" vector of individual development, the means of which is a priori knowledge, the problem of the origin of which cannot be solved within the framework of these concepts, it is therefore necessary to have a concept that allows to explain the origin of a priori knowledge and to offer a mechanism that does not ensure

the translation of ideal forms with the a priori knowledge as a means, but the creation of subjective knowledge as a means of self-development.

Such mechanism is the mechanism of creative mediating [152], which, unlike the "horizontal" structure of causal and sign mediating mechanisms, has a "vertical" (historical) structure. Thanks to this mechanism, it is possible to produce values of a new historical type (new knowledge) by transforming values of the previous historical type (old knowledge). As the psychological means acts the historical logic of origin of ideal forms, representing value of historical logic of complication of a subject reality of cult

Thus, the way of existence (essence, according to S.L.Rubinstein) of a person is made by him as a result of creative mediation [153]. Creative mediating is a mechanism of self-development as a transition between the historical past, present and future.

The historical perspective of creative activity, created with the help of historical logic as a psychological tool, covers both the historical past and the historical future. Anticipation in history as a sign of the future ideal forms of subject activity as a result of historical reflection of its past ideal forms allows to create creative activity and actually build at the moment the transition from the available subject activity to the future subject activity [149, p.33].

The construction of historical logic as an ideal form of creative activity creates conditions for the transition between present and future subject activities as ways of reproducing present and past subject cultures. Real present subject activities are incorporated into the same structure as ideally existing future subject activities. This structure creates a psychological field of self-development provided by creative activity as a space in which ideal forms are created and become the means of developing subject activity.

The history of the subject culture as a special sign, the meaning of which becomes the historical logic of the origin of the subject culture, becomes a psychological means of organizing creative activity. The determinant of creative activity is the historical meaning, the psychological content of which is the historical logic of the origin of a subject activity.

The historical logic of the origin of a subject activity serves as the source of the emergence of a new ideal form of new subject activity and thus determines the emergence of a new subject activity. With the help of the historical sign, new ideal forms of object activity are created by transforming the former ideal forms. The human being creates new subject activities, giving birth to new

ideal forms in creative activity.

Formal values are the ways of reproduction of subject activities [100, p.146]. Historical meanings represent ways of production of subject activities. To produce new meanings (new ideal forms) means to produce new subject activities.

To master the meaning of a cultural object (subject sign) is to master the way of a subject action reproducing a cultural object (A.N.Leontiev). The subject value can be understood as an ideal form of reproduction of the subject world of culture, socially expressed attitude to it [126, p.173]. To master the historical meaning is to master the ability of creative activity producing a cultural object (sign). Historical sense can be understood as an ideal form (logic) of production of the cultural object (sign) world, historically expressed attitude to it.

The creative thinking [154] and acting person is the source of origin of all his or her specific properties, the source of his or her own self-development, which takes place in the process of creating new ideal forms as means of constructing new subject activities. The ability to act creatively arises in the interr subjecc tive environment created by the subjects of selffdevelopment themselves to solve their own development problems.

In ontogenesis, ideal forms of new subject activities are created by the students themselves. Therefore, the process of self-development takes place "from within", through the production by students themselves of ideal forms that determine the processes of their self-development. This implies the necessity of organizing inter-subject relations [155, p.92.] as forms of a special process - production. During production, the child creates an ideal form of subject activity. Production of an ideal form is a universal form of self-development.

In the processes of production the constructed concrete transitions from one type of subject activity to another acquire historical sense that gives the chance to carry out each concrete-historical process of generation as universal. In historical senses the universal relation of the genesis of the cultural subject world, fixed in historical signs, is reflected [87, p.105].

3.2.2 Creative Mediation as a Mechanism for Determining Creative Activity

The main provision of the concept of self-development is that the genesis of the psyche is provided by the genesis of subject activity as a result of creative

activity. The genesis of subject activity occurs as the genesis of its ideal form, providing the formation of its real form.

In the psychology of self-development, creative activity should be understood as a way of producing ideal forms of subject activity. The main idea of the concept of self-development is that the source of production of a new ideal form of subject activity is the history of development of subject culture. The process of producing an ideal form of subject activity is the leading one. It will mediate the process of generating a real form of object activity.

Intermediate history of human psyche (consciousness) by the history of the subject culture is the main methodological position of the self-development concept. Mutual mediocrity of the history of consciousness and the history of the subject culture means "external and internal" nature of the human psyche.

The general genesis of subject activity and the genesis of the subject culture means that creative activity is a factor providing both processes of genesis. Creative activity is a factor that generates, manages and organizes both processes of genesis. Creative activity turns the possibilities of genesis of object culture into the possibilities of genesis of object activity.

From the point of view of the concept of self-development, the real basis of a human being as a subject of self-development lies not in genetic programs laid down in him, not in the depths of his natural inclinations and aspirations, not in knowledge, skills and abilities acquired by him, not in subject activities formed by him, which are realized using these knowledge and skills, but in creative activity as an ability to produce new types of subject activities.

From this point of view, creative activity as the subjective historical attitude of man to himself expresses subjectivity as an "inner" quality of man, his essence, the way of his existence. Constructing the processes of his development with the help of the ideal form (logic) of history, a person is the subject of history.

Subjectivity occurs only when, for the person himself, the transition from one type of subject activity to another is objective, given as the subject of his creative activity. The means of such objectification is history as a sign, which acts as a determinant of his creative activity and thanks to which a human being becomes capable of taking his existence as a subject of subject activity out of himself and fixing it outwardly as a subject of creation.

As a result of creative mediation [156], the "inner" mechanism of which is subjective reflexion, the former ideal forms of subject activity are overcome as

the limits of self-development. As a result, they become concrete-historical, i.e. generated by man as a subject of self-development and purposefully (arbitrarily) overcome by him. This means that the creative person is capable of generating any ideal forms, controlling and constructing his or her own history of development.

History as a sign is a psychological means of producing a new structure of subject activity to the extent that it becomes a determinant of creative activity as a mechanism of creative mediation.

According to G.S.Batishchev's concept [87], the subject is actualized in creative activity, in creation of his own existence. Performing himself as a creature generating himself in the creative activity, a historical man creates a new objective situation. Through creative activity a human being also generates himself. But the birth of an objective situation and self-origination do not coincide with each other. This position distinguishes the concepts of G.S. Batishchev and K. Marx. According to K.Marx, people change themselves through changing circumstances. According to G.S.Batishchev, people change *circumstances through changing themselves* [87].

3.2.3 Creative Mediating as a Mechanism for Determining Self-Development

The essence of self-development is to resolve the contradiction between the need for new ideal forms of subject activity, with which a child meets in a new subject situation, and the previous ideal forms of subject activity, which characterize his or her current level of development. The historical environment of the subject culture [157, p.30-48] is a precondition for the student's self-development, which takes place in the process of generating new ideal forms of subject activity.

According to the concept of self-development, ideal forms are not given initially and are not given (in the sense of cultural-historical concept). They are constructed as means of solving genetic problem. The process of self-development takes place "from within", by determining its ideal form, which is constructed by the student.

The new ideal forms consolidate human subject activities, abilities, qualities that arise in the course of human self-development. Outside of the production of ideal forms, a person will never develop specifically human qualities of creative activity.

The peculiarity of self-development is that at the very first moment, at the beginning of the construction process of self-development, the ideal form of new subject activity as a determinant of self-development is absent and man creates it. It is in this sense that one should understand the provision that a human being is the source of his/her own development. Creative mediation by an ideal form of a new subject activity is the inner content of self-development.

"Vertical" self-development occurs at critical periods (critical ages). The specificity of the "vertical" period of self-development is that at the beginning of a crisis a person constructs a new ideal form of subject activity, and then its relation to the existing real form of subject activity sets a new historical situation of self-development.

The crisis of self-development is a special psychological space in which a new act of self-development is built and carried out as a result of the fact that the type of a subject culture is changing and a person is forced to overcome his or her previous possibilities and build a new subject activity [16, p.51].

Crisis age has three main phases: pre-critical, critical and post-critical. The pre-critical phase is characterized by the emergence of a contradiction between the actual ideal form of the former subject activity and the required new real form of the new subject activity. The critical phase. The construction of the new ideal form as a result of inter-subjective communication: the "former ideal - new ideal" transition takes place. Post-critical phase. As a result of determinacy, the "old ideal - new ideal" transition is carried out by the "old real - new real" transition. The human being builds new real forms of subject activity. The historical type of symbolic mediation changes. As a result, the act of self-development is practically realized.

In a crisis age, self-development starts by using the available opportunities in the same way. Then begins the phase of constructing new possibilities, as a result of which the old type of psyche turns into the new one. This occurs in conditions of inter-subjective constructive activity when a new type of subject activity is created. At the end comes the stage when the interr subjective constructive activity becomes unnecessary for some time and a person mastered the new type of subject activity.

At the stage of using the previous capabilities, an attempt is made to build a new subject activity in a way that is not typical of the previous one. There is a conflict in the structure of a self-development crisis, which initiates the necessity of transformation of the subject activity. This is followed by a

transition from conflict to historical (retrospective) reflexion [2, p.161], which transforms into creative (perspective) reflexion, which creates a new ideal form of subject activity.

The act of self-development is implemented by creating a new ideal form of subject activity. Before the crisis, the student's subject activity is directed at the subject. In crisis conditions, the subject activity itself becomes a subject of creative activity.

The mental mechanism for constructing a new ideal form is creative reflection as the inner content of interr subjective communication. As a result of interrsubject communication, a new ideal form is created, which then becomes a psychological means of constructing a new subject activity, generating a new subject culture.

Creative activity is an "internal" attitude of subject activities of different historical types. As an "internal" attitude, creative activity emerges as a way of resolving the contradiction between the former ideal form of subject activity and its new real form.

The analysis of creative activity is an analysis of the self-development crisis. In this crisis, a sense of the need for new subject activities related to the historical value of self-development comes to the fore. This ensures the formation of a person's attitude towards himself as a subject of his own development. Thus, creative activity is a mechanism of forming historical subjectivity due to the fact that a person becomes an end in itself [19, p.110].

If to stop only on necessity of destruction of old schemes of subject activity, it will lead to that at the moment of destruction of the former scheme of subject activity there should be a psychological vacuum, historical connection of the past and the future should be broken. It is possible to avoid it, assuming that the act of destruction of the former schemes is simultaneously an act of occurrence of the new scheme. The relation allowing to connect together acts of destruction and acts of occurrence of schemes of subject activity is historical sense in which both old, destroying, and new, created is always presented. - Historical sense is a unifying link that connects the destruction of the former schemes of object activity with the synthesis of new schemes of object activity by a historical link.

In stable periods, the subject activity, which has ideal and real forms, is reproduced, formed and improved. In crisis periods, the subject activity is produced, becomes the subject of creative activity.

A stable period is characterized by the fact that there are both the real form of human subject activity and its ideal form, which determines the "horizontal" development of subject activity, and subject signs as mediating means of translating ideal forms into reality of subject activity.

The critical period is characterized by the fact that there is neither a new ideal form of subject activity, nor a sign as a mediating link between the former real and new ideal forms of subject activity, nor a history sign as a means of generating a new ideal form of subject activity.

3.2.4 Creative intermediation as a mechanism for producing ideal forms as a determinant of self-development

Cultural birth is about transforming the "natural" object world into the object world of inter-subject culture, "defining" its modes of activity in its ideal form. This means that the process of self-development is determined by the creation of a new ideal form of culture.

The creation of an ideal form of culture takes place in the process of cultural birth. Cultural birth determines the logic of self-development, which is constructed in a problematic genetic situation and serves as a psychological means of determining the real process of self-development. The main condition of a student's self-development consists in constructing by him or herself new human ways of action, which are mediated in ideal forms of instruments and signs designed by him or her acting as means of his or her real actions [82, p.54].

The learner develops himself/herself in the process of cultural renaissance. The process of cultural birth itself is always carried out in the form of human cooperation with other people and is the production of ideal forms of subject activity as one of the most general laws of human self-development [158].

Cultural birth is a specially organized process of independent creative (constructive) activity of a person, carried out as a creation of a new ideal form of subject activity, mediating the transformation of its former real form. Cultural birth is a process of organized self-change of a person, mediated by the ideal form created by him/her [159].

At the cultural birth stage, the ideal form is the product of creative communication between people. The production of goals, means and ways of future subject activity, which represent the content of this ideal form, is the central point in the formation of the psychological system of subject activity.

The ideal form is the ideal form (meaning) of the object medium. As an initial object means is a real tool, the ideal form of which is later separated (alienated) from it and fixed as an independent reality in the ideal means ("signs"). It is through the construction of ideal means ("signs") is the transformation of some historical forms of the psyche in its other historical forms.

The ideal form is produced in the process of cultural generation, works as a sign by which transitions between subject activities of different historical types are constructed. A man, mediating his self-development by cultural generation, makes his subject activity the subject of transformation, creating its new ideal forms as his real future [80, p.130].

The origin of the values depends on the person. They act as objects of subjective reflection and, at the same time, as means of self-development. In historical senses, the ideal form (historical logic) of the self-development of the subject world is represented as the means of production of meanings, which has been transformed and curtailed into a history sign [7, p.161]. The universal nature of historical senses expresses the fact that they are constructed by man and are the product of his creative activity. The human being constructs historical meanings of history. He creates something that does not catch at birth.

As a result of crop production, new tools with new values are being constructed. The production of values takes place in the inter-subject (S.L.Rubinstein) form of communication. The act of value production, carried out as a creative intermediary [160], is the internal content of the whole process of culture formation, which determines the process of self-development. Creative mediating as a method of production of ideal form is an internal mechanism of cultural generation (generation of values) [161, p.219-227].

3.3 Theoretical and methodological foundations of the concept of self-development

3.3.1 Approaches to developing the concept of self-development in pedagogy and psychology

Although there has always been a need for concepts of self-development, there are currently only a few individual ideas on the basis of which "self-development" can be developed in the future.

These ideas are mainly developed by G.K.Selevko and V.G.Maralov among teachers. And among psychologists G.A.Zukerman, to a certain extent V.I.Slobodchikov, V.T.Kudryavtsev, B.D.Elkonin.

Foreign scientists who develop concepts of self-development based on the understanding of man as the source of his own development are unknown to us.

G.K.Selevko's approach [162] is based on the idea of the need to solve the problem of educational and cognitive motivation, which, in his opinion, is most acute after the children finish primary school. In G.K.Selevko's opinion, this problem is not and cannot be solved within the framework of the known concepts of developing learning, to which he refers concepts of D.B.Elkonin-V.V.Davydov, L.V.Zankov, I.P.Volkov, G.S.Altshuller, I.P.Ivanov [162].

Without revealing the term "self-development" at the conceptual level, G.K.Selevko describes it, attracting components of the famous pyramid of A.Maslow's needs. From this point of view, according to G.K.Selevko, the highest spiritual needs in cognition, self-assertion, self-expression, security, self-determination, self-actualization - these are the aspirations to develop and improve themselves. That is, to self-development, self-improvement [163].

Appropriate conditions must be created to enable the individual to meet his or her needs, which are the basis for self-development. Namely, to provide freedom of will, space for creative activity, social comfort [164]. The mechanism of satisfaction of needs is cognition, testing and realization of one's own possibilities. In the processes of satisfying needs, the experience of activity is appropriated. In other words, socialization, self-development. At the same time, self-development processes are spontaneous and spontaneous [165].

The technology of personal self-development includes all the essential features of developing technologies, but, according to G.K.Selevko, has a fundamentally new quality. Namely, activity of the child is organized as satisfaction not only of cognitive needs, but also of a number of other needs of self-development (in self-affirmation, self-expression, protection, self-actualization).

It is to meet these needs that all the educational work of the school, including the club sphere, society and all its educational institutions is aimed at. For realization of personal self-development technology includes three interrelated subsystems: subsystem "Theory", subsystem "Practice" and subsystem

"Methodology".

Within the framework of the subsystem "Theory", the training course "Self-Improvement of Personality" (grades 1-11) is carried out. Within the framework of the subsystem "Practice", the development of independence, abilities and self-improvement skills of students occurs in various integrated structures: "educational centers", "open university of self-improvement", "scientific society of students", "student self-government". In the framework of the subsystem "Methodology", the educational process acquires the following fundamental features: turning the pedagogical guidance of self-education and self-education of the student into the main priority; shifting emphasis from teaching to learning; the use of not only the cognitive, but also the entire needs of students; stake on students' independent and creative activities; activation and stimulation of the process of understanding the doctrine, the student's exit in a reflective position; shifting the center of gravity of the pedagogical process towards the formation of self-governing personal mechanisms; systematic and consistent formation of general educational skills [166].

V.G.Maralov's approach is based on the subject approach developed by Russian scientists L.S.Vygotsky, S.L.Rubinstein, B.G.Ananyev, A.N.Leontiev, B.D.Elkonin and others. It is believed that in Russian psychology V.I.Slobodchikov and E.I.Isayev were among the first to define self-development and to justify its distinctive features. In their opinion, self-development is the fundamental ability of a person to become and be a true subject of his life to transform his own life activity into the subject of practical transformation [167, p.65].

V.G. Maralov believes that the first characteristic of self-development is life activity as a continuous process of goal setting, activities and behavior. It is within the framework of life activities that the process of self-development is carried out [167, p.66]. However, a person becomes a subject of self-development only when he or she starts setting goals for self-assertion, self-improvement, and self-realisation. That is, to determine the prospects of what he is moving towards, what he is achieving, what he wants or, on the contrary, does not want to change in himself [167, p.66]. In V.G. Maralov's opinion, the second characteristic of self-development is the activity of the individual. It is believed that social activity takes place on four levels in its development: normative, normative-personal, personal-productive, and productive-creative.

Since it is believed that the normative and personal level of development of

social activity is characteristic of adolescents and young men, that is why a child in adolescence can become a subject not only of his or her life activity but also of self-development [167, p.67]. The ability to demonstrate social activity gradually determines the ability to make personal choices. In other words, it develops the tendency towards subjective freedom [167, p.67].

The third characteristic of self-development is the level of development of self-consciousness, the ability to self-knowledge. The developed ability to self-knowledge with its mechanisms (identification and reflexion) is organically included in the process of the individual's self-building, determination of prospects, ways and means of self-development [167, p.68].

According to V.G. Maralov, a single "brick" of self-development is an act of personal self-development. Self-constructing is a process carried out through acts of self-constructing in a particular situation. Its essence is as follows. The human being is able to build a "model of the real self" through self-prediction mechanisms. In other words, to project oneself into a close future, limited by a specific situation. This "model of the Self" is embodied in the "real Self". As a result, a person chooses a strategy of self-building: he or she re-creates himself or herself in the former quality or in the new quality. However, the author does not describe the mechanisms of such self-building, only pointing out that there are many factors ("what I was", "what I achieved", "how I experienced", "what I am now", "what I would like to see myself for myself, etc.) [167, p.76].

From V.G.Maralov's point of view, self-development takes three most important forms. Namely, in the form of self-assertion, self-improvement and self-actualization (according to A.Maslow) [167, p.81]. V.G.Maralov suggests considering self-acceptance and self-prediction as psychic mechanisms of self-development. Self-acceptance refers to the recognition of the right to the existence of all aspects of one's own personality, as well as the individual as a whole. Self-acceptance refers to the ability to anticipate the events of external and internal life related to the tasks of future activity and self-development. In combination with self-knowledge, self-forecasting makes it possible to identify the prospects of personal development, to highlight the ideal image of the Self, the system of requirements to which the individual will aspire and which will be oriented in the near future or more distant time [167, p.90].

Self-prediction provides an opportunity in its limit to "see" itself in the future, up to its new reactions in specific situations. That is, as if in advance in the imagination to build up their own personality, to which they will aspire for a

certain period of time. This is what defines the prospects for self-development in its various forms [167, p.91].

At the same time, self-prediction is based on the results of self-knowledge, including its final result - self-acceptance. The strategy of personal self-development will be determined by the peculiarity of the combination of self-acceptance and self-prediction. These mechanisms are interdependent. Moreover, self-prediction as the basis for developing a strategy of self-development to a greater extent determined by the level of self-acceptance of the individual. But not vice versa [167, p.91].

It is proposed to recognize as optimal a strategy when a person, taking in himself both positive and negative qualities, nevertheless, sets by self-prediction real tasks of personal growth and change, which are constant and sustainable. Without denying himself, he asserts himself. Without destroying himself, he self-improves. Taking into account all the circumstances of his life path, he fully self-realizes himself, building up an image of himself that actually expresses not his appearance, but his true essence [167, p.93].

G.A.Zuckerman's approach is based on the view that culture translation ceases to be the basis of education. The author believes that not (or not quite) what we have received from the past should be transmitted into the future. That is why, according to the author, we are in extreme difficulty, we feel confused before new pedagogical situations [118, p.14]. In other words, that is why there is a crisis in education. That is why the transition from an attitude towards the development of children to the pedagogical value of self-development of the child and the teacher is the formula for a new pedagogy that is emerging today [118, p.16]. For this purpose, it is necessary to understand the logic of the development of subjectivity and to build the pedagogy of self-development only on its basis [118, p.16].

Self-sufficiency, responsibility, initiative - all these qualities are prerequisites for self-development, and to varying degrees are inherent even in young children. But children's independent, responsible, proactive actions exist as islands in an ocean of adult care. The situation changes radically only in adolescence [118, p.18]. These qualities become characteristics of a teenager's holistic personality.

The author believes that the birth of the subject of his own development, the author of his own biography is possible in the transition from minimization, rotation of his externally given human.

of nature (biological, social, cultural) to the point of "I" - to unfolding of the "I" from potential to the embodied universality. This turning point of development, culminating in the discovery of one's own Self, is traditionally associated by psychology with adolescent age [118, p.21].

The author proposes the following as a system of notions expressing the essence of "self-development". Self-development is a behavioral text that I create unintentionally without knowing what I am creating. It is read and interpreted by others; from them I learn about the very existence of my self, its content, and the ways of its creation and interpretation. The moments of getting my self into my consciousness are self-awareness flashes [118, p.25].

Self-awareness is knowing one's own self. Accordingly, self-esteem, self-acceptance, self-respect are evaluation, acceptance, respect for one's own self. But who is the "I", who knows about my self, who assesses, accepts, or does not accept it? The "I" is the self that is reflexive and learned. I mean, the subject of his own development. The discovery of the Self is the knowledge of one's own knowledge of one's own self. Self-development is a conscious change and/or an equally conscious desire to keep my Self intact. The goals, directions, means of these changes are determined by myself [118, p.26].

V.I.Slobodchikov's approach is based on the point of view of the need to strictly distinguish between the concepts of "development" (*genes*) and "origin" (*gonos)*. The author believes that what is developing is developing. What does not exist is (may happen) [2, p.144]. Thus, the origin is a secret which can be opened and to which it is possible to join. It is suggested to distinguish the processes of functioning and development. In this sense, development is a process of appearance of a new qualitative state of an object, which acts as a total change of its structure and functioning mechanisms. As an example of development the author cites the process of transformation of a caterpillar into a pupa, and a pupa into a butterfly. The point of fracture, transformation of one into another, is the development situation [2, p.145].

The author shows that the development of man, his subjectivity and the entire psychological system is both natural and artificial processes. That is, the development process can be represented in two ways. On the one hand, according to the scheme of the process (as a natural temporal sequence of steps, periods, stages that have a causal determinacy). On the other hand, according to the activity structure (as a set of methods and means of "development", where following them one after another has *not a causal* but a *target* definition). In this connection, the first (causal) type of development unfolds

in the essence of nature, and the second (target) - in the essence of society [2, p.146].

Along with these two notions of development, according to the author, it is necessary to introduce another one - the idea of self-development. That is, the development of one's own self. The author believes that in psychology we should talk about the development of the human essence. It is about self-development as a fundamental human ability to become and be a true subject of his own life. Transforming one's own life activity into the subject of practical transformation. It means that human development is determined by one more factor - value and meaning. That is, for a human being development represents the goal, value and meaning of his own life [2, p.147].

V.T.Kudryavtsev's approach is based on the point of view on individual development of a person as a mechanism of history. Moreover, the mechanism is irreplaceable, performing its unique function in cultural genesis. The author believes that the main purpose of the specific-historical method is to reveal the original, culturally-generating, creative possibilities of individual consciousness in a universal historical perspective [88, p.23].

V.T.Kudryavtsev believes that the dissolution of the "historical" in abstract social structures with logical inexorability leads to the destruction of the problem of the man as the author and subject of culture [88, p.25]. At the same time, the reduction of historical to social was in many ways characteristic of former Soviet psychology. It was based on the belief that social is what has "become" historical. And, consequently, the former serves as the embodiment of the latter. That is why sociological trends in psychology, although criticized, were often identified with historical trends [106, p.354].

The author shows that for theoretical analysis the fact of human sociality is only significant to the extent that within the boundaries of the social mode of life for the first time is born and formed a truly universal and free type of development (in the image of man as a subject of history) - a type of development characterized by creative orientation. From this point of view, history appears as a form of active mastering of a person's own essence, which was not given to him initially. This essence is not predetermined either by the laws of the "preset harmony of the world" (G. Leibniz), or by the natural properties of man, or by the existing forms of socialityas such. It arises and develops in the process of historical transformation of the world by a human being into the World of Man, and, consequently, in the process of historical development itself. The history of mankind is the history of changing the active

human essence (and in this sense - self-change of man) in the course of collective creation by people of the subject body of civilization, which crystallizes in itself universal abilities of its creators. This determines the initial reflexivity, selfdetermination of the subject of the historical process and historical cognition [88, p.26].

Developing in the context of historical culture and itself, developing it, "man ... does not reproduce himself in any certainty alone, but produces himself in all his integrity, he does not strive to remain something finally established, but is in an absolute movement of becoming" [88, p.27]. According to the author, the main thing in the historical (and anthropological) concept of K. Marx is the nomination and consistent development of the thesis about the universal creativity of man as a generic and individual subject in relation to the sphere of culture and history [88, p.27].

From the author's point of view, the idea of historicism directs the psychologist to search for specific ways to include the individual as the bearer of activity, consciousness, let alone personality, in the process of producing new forms of historical culture. Psychologists - from P.Jeanet to A.N.Leontiev - traditionally emphasized the dependence of the forming individual consciousness on its socio-historical determinants. The fact of this dependence in itself is indisputable. However, the theoretical absolutization of this dependence led to the erasure of the peculiarity of the specific human way of development, which was emphasized by the classics of German philosophy (I.Kant, I.-G.Fichte, F.Schelling, H.Hegel, L.Feuerbach and later C.Marx). This peculiarity consists in the fact that a person is free to believe, produce and reconstruct the determinants of his own development, including the determinants of social and historical [88, p.30].

In conclusion, it should be noted that such classics of genetic psychology as P.Jeanet and L.S.Vygotsky did not accept the "historicity" of the psyche as given, but tried to derive it. That is, to construct the theory of mental development as a history of consciousness development. It is possible to treat these attempts differently, but they have no analogues yet. They are one of a kind [88, p.32].

B.D.Elkonin's approach is based on the point of view on the deployment of mental processes (and behavior in general) as a transition to a new principle of their generation. The model of such transition is sign mediating. In sign-mediating, the very naturally formed stereotypes of behavior become the subject of change and, therefore, are already overcome as natural. They

become conscious and arbitrary (i.e., a person takes possession of his or her own behavior) [168, p.8].

A man takes control of his behavior by reinventing it. The person generating his or her behavior becomes his or her subject. One can say that the "meeting point" of ideal and real forms is specific and significant in that it is the subject of behavior. Indication of the subject and subjectivity presupposes the construction of the interchange of real and ideal forms [168, p.9].

The subject exists, is discovered when the shift itself is expressed and objectified, the transition from the natural to the cultural form, to the transformation of one's behavior into an object, to the use of means of detecting and seeing one's own behavior outside oneself [168, p.10].

The analysis of the transition was based on a tacit assumption about some special effectiveness of the mark. It was based on the fact that the mark works. It means that with its help, behavior is organized, reoriented, its natural stereotypes are overcome, new forms are built, etc. But why and at the expense of what it happens? One can say that the sign is effective to the extent that it is transmitted and received in a certain function, status, stimulus-medium value, to the extent that stimulus-medium is given this value [168, p.15].

The significance of the means is exactly what is given. It cannot be a property of the thing itself. This is the "cultural" and "signification" of stimuli - means, their unnaturalness. Value is given in an interpersonal form and cannot happen otherwise. In the act of giving and receiving meaning, i.e. in the way and by what means it is given and accepted, the whole mystery of mediating is hidden - the main question of both cultural-historical conception and its branch - of the activity theory of psyche. The mystery is not in how the stimulus that has already become the means works, and certainly not in how it worked before. The question is in the formation itself, in the structure of the "gap", where the transformation of the stimulus into the means takes place, or, more broadly, where the thing becomes meaningful. This "gap" is the place where real and ideal forms meet. It is here that the problem of the birth of the subject of action lies, i.e. the problem of development, or, more precisely, development as a problem [168, p.15].

B.D.Elkonin's position is rather aimed at the future, at building an opportunity to solve the problems of development (and, in fact, self-development). it is certainly an interesting, perspective and heuristic position, which is still ahead of us. In the meantime, the "subjective "fabric" of the act of development is an

almost undeveloped area, which is why a hypothetical rather than a generalized resultant pledge is more appropriate in speaking about it". [168, c.130].

Conclusions on 3.3.1. The complexity of the problem of self-development and the lack of the necessary theoretical means to solve it often leads to the fact that this problem is tried to solve with the help of eclectic connection of content not bound, alternative positions. In our opinion, the reference to eclectic (or polyparadigmatic) schemes [169] is caused by the weakness of theoretical foundations and inextricable methodological and psychological "inconsistencies". In our opinion, eclecticism, which is not accidental in our time finds more and more supporters, as a method is able only to aggregate external, insignificant features of the subject of study. But to penetrate into the essence of the case, to solve the problem of origin, he certainly can not.

G.K.Selevko's pedagogical position is especially eclectic in nature. Without disclosing the psychological and pedagogical content of the concept of "self-development", he attracts various theoretical positions of alternative, sometimes incompatible, psychological concepts to illustrate it. In fact, understanding self-development by self-development, G.K.Selevko considers the well-known pyramid of A.Maslow's needs as the theoretical basis of his position and the term self-development is illustrated by means of hierarchical needs introduced by him. Directly pointing to the psychological concepts of developing learning as his theoretical basis, G.K.Selevko emphasizes the novelty of his approach in the fact that self-development is associated with the provision of organization to meet not only cognitive needs, but many others. Thus, the idea of self-development is to independently use the means appropriated under the conditions of developing technologies to improve oneself. And the technology of self-development, according to G.K.Selevko, is a system of additional extra-curricular activities, in which the student independently has the opportunity to meet all his needs.

It seems to us that in methodological and theoretical terms G.K.Selevko's approach is not interesting; in practical terms, in our opinion, it simply repeats the experience of well-known teachers of the past.

V.G.Maralov's position is not independent. It represents a set of points of view of famous cultural and historical psychologists. V.G.Maralov's position is based on the definition of self-development made by V.I.Slobodchikov and E.I.Isayev. In his reasoning, V.G.Maralov proceeds from the identification of self-development and self-improvement. Based, as well as G.K.Selevko, on the pyramid of needs A.Maslow, believes that self-development is carried out in

three main forms: self-assertion, self-improvement and self-actualization. - From V.G.Maralov's point of view, the psychological mechanisms of self-development are the mechanisms of self-acceptance and self-forecasting. The author does not disclose the psychological content of these mechanisms, but from the context of the book it becomes clear that the meaning of self-development by V.G. Maralov is the same as the meaning of self-development by G.K. Selevko. Namely, in self-actualization, i.e. in full disclosure of the potential inherent in nature. But how this is done remains unclear.

G.A.Zukerman also does not reveal the psychological content of the concept of self-development. But this does not detract from the importance of its most important idea that the broadcasting of culture ceases to be the basis of education. She believes that education should not transmit, at least, not what is now the subject of transmission. It is true that the definition of self-development that G.A. Zuckerman proposes raises questions. By self-development, she proposes to understand conscious change and/or an equally conscious desire to preserve my Self intact. The goals, directions, means of these changes are determined by myself. In our opinion, there is a clear contradiction here. At least, the author does not reveal the mental mechanisms and does not reveal the psychological peculiarities of situations in which it becomes possible to change one's own self.

From V.I.Slobodchikov's point of view, self-development is the fundamental ability of a person to become and be a true subject of his life to transform his own life activity into the subject of practical transformation. Without disclosing the content of the concept of "self-development" in more detail, V.I.Slobodchikov emphasizes the concept of "subjectivity", which in his view is the ability to make oneself and its essence the subject of practical transformation. V.I.Slobodchikov and E.I.Isayev's work does not give an analysis of the concept of development and therefore it is not fully clear what the authors mean by development. However, the provision that only what has already taken place can be developed suggests that we are still talking about the "horizontal" type of development. Taking into account the fact that V.I.Slobodchikov considers imitation (and reflexion) as a mechanism of development, we can say that most likely self-development is understood as development (or improvement) with the help of means previously appropriated in the process of learning.

V.T.Kudryavtsev does not directly discuss the problems of self-development. But the logic of his reasoning, which is associated with the consideration of

the child as a subject of the generation of culture, leads to an understanding of the child as a selfchanging being. He believes that reflexivity and selffdrivenness as basic abilities characterize a person as a subject of a historical process and historical cognition. At the same time, reflexivity and selffdrivenness can serve as mechanisms of cultural origination, the subject of which is the child. This expresses the perspective strategic approach of considering the child as a subject of history, who creates social history through his/her individual activity.

B.D. Elconini doesn't speak directly about self-development either. But the very spirit of his work shows that it is self-development that is the true subject of his research. Following L.S.Vygotsky, he believes that the main thing in cultural-historical psychology is human subjectivity. It arises when a person mastered his or her behavior. The means of mastering one's behavior is the importance, according to B.D.Elkonin, which is given to the means of transmission. The peculiarity of B.D.Elkonin's concept of ideal form, in our opinion, is that an ideal form can be transferred to a child when he himself is able to recreate and reproduce it. It is in recreating and reproducing the ideal form that the idea of self-development is expressed, which B.D.Elkonin discusses as a problem of becoming a subject of one's own behavior. The author does not specifically discuss the mechanisms of self-development, but the general context of the work suggests that such a mechanism is understood as imitation. In our opinion, this means that Elkonin's self-development turns out to be a "horizontal" vector of development.

3.3.2 Psychological content of self-development

The psychological content of the concept of self-development should be developed based on the methodological position that development is the transformation of possibility into reality [137, p.271] [137, p.271] [137, p.270]. But if in natural nature self-development occurs spontaneously and spontaneously [137, p.271], then human self-development occurs as a deliberate production of new possibilities and the creation of new realities of subject activity with their help as psychological means. The source of human selffdevelopment is the history of the subject culture, while new opportunities (a determinant of selffdevelopment) are ideal forms of subject activity produced by a person.

The main category, on the basis of which it is possible to construct the concept of self-development, is the category of subject relations. The content of subject-subject relations is the creative attitude of a person to himself,

expressed in the production of new historical forms of subject activity as his own cultural essence. The person generating his or her own essence is the subject of self-development [2] [168]. From this point of view, human subjectivity should be understood as the ability to make oneself (its activity essence) the subject of production. In other words, the subject of transformation of one of its historical types into another. Therefore, the human being as a subject of self-development is the subject of transformation of subject activity from one of its historical forms into another.

By its very nature, such an understandable subject-to-subject relationship is "internal". That is, conditioned by the individual himself. The "inner" form of the subject-to-subject relationship arises in the "external" form of the subject-to-subject relationship (or, more precisely, between subjects, according to S.L. Rubinstein). Moreover, the "inner" subjecttoosubject relation as a creative relation to oneself only emerges when the Other becomes the goal of my creative activity, and I, in turn, become the goal of the Other's creative activity [170] [56], [87] [171] [172] [173] [174] [97].

Inter-subjective (creative) communication is a way of solving the contradiction between the former ideal form of the subject activity and the new level of complexity of the subject situation. As a result of interrsubject communication, the "internal" subjecttoosubject contradiction [6, p.88] is solved by transforming the former ideal form of the subject activity into its new ideal form. As a result of interr subject-to-subject communication, a person overcomes his or her former possibilities (former ideal forms of the subject activity) [175, p.106].

The concept of "self-development" directly correlates with the notion of the human being as a subject of generating an object culture. By its historical nature, man is a creative being, making the history of the object culture the subject of his generating activity. In this connection, at present the main problem of psychological science is the contradiction between the "external" (socio-cultural) determinacy of the existence of a social person and the "internal" determinacy (self-determination) of the existence of a historical person [176, p.199] [97, p.76]. This contradiction is especially noticeable in the system of education, which has turned into the latter from a factor stimulating the formation of man as a subject of generating own possibilities to a factor preventing this. The socium has turned from a factor stimulating the formation of an individual as a subject of development into a factor preventing it [177].

The solution to this problem can be found by changing the emphasis from "social - individual" to "social - individual". Namely, the scheme of transformation of social opportunities into individual ones as a methodological basis of culture-consuming education should be replaced by the scheme of generation of individual opportunities by a person and their transformation into social opportunities as a methodological basis of culture-consuming education [97, p.76] [8, p.47].

Theoretical means of solving this problem is the notion of "self-development". Self-development as a psychological concept is based on a person's production of his or her individual abilities as social abilities [178]. Therefore, self-development is a way for a person to produce himself and society [68, p.134].

Since the "internal" source of self-development is the attitude of human genesis as a subject of generating subject activity [82, p.118], to the extent that self-development is always beyond actual possibilities as a result of creating new ones. Selffdevelopment is always a overcoming [179, p.6].

The human being develops himself [19, p.67] and is the only source of development of social and cultural reality [16, p.140]. Only the individual person produces new social forms, new ideas and patterns of human behavior [180, p.193] [181, p.269]. The necessity of the subjecc tive (generating) relationship as the psychological content of self-development sets new requirements for the educational system. That is why the universality of a human being should become one of the most important priorities of cultural nascent education [88, p.119].

The perspective of cultural nascent education is that, as a result, students learn how to create new cultural subjects (new subject cultures), while as a result of cultural consumption education only ways of using existing cultural subjects (subject culture) are learned [88, p.27]. Therefore, entering the world of culture, a student should master not the available ways of dealing with cultural objects, but the universal capacity for self-development as the ability to create new cultural objects (subject cultures) [88, p.26].

3.3.3 Self-development as a transition to a new level of mediation through inter-subject constructive activities

Constructing the logic of self-development is based on the hypothesis of individual development as an individual form of historical development [182]. The theoretical basis for constructing the logic of self-development in ontogenesis is the understanding of history as a change in historical types of

the object world of culture. The concrete-historical type of culture corresponds to the concrete-historical type of subject activity [183]. Moreover, the subject activity should be understood not as a practical intentional attitude of a person *to the subject* culture external to him/her, but as a practical intentional attitude of a person *within the* subject culture. That is, as a way of practical transformation of objects within a subject culture. Or, in other words, as a way of reproducing the object culture.

From this point of view, subject activity is the genetically initial "internal" essential relation of a person in the subject culture, expressing the genetically initial "internal" relation of reproduction of the subject culture.

Subjective activities are related to their ideal and actual reality. Ideal reality mediates its real reality, and vice versa, the real reality of the subject activity mediates its ideal reality. The activity of the reflexive consciousness acts as the mediating relation. Thus, the subject activity is the real reality mediated internally by its ideal reality through the activity of reflexive consciousness. The real reality of subject activity is its real forms (processes and results of transforming cultural objects into each other), while its ideal reality is its ideal forms (goals and ways of activity).

The criterion for distinguishing types of subject activities can be derived from a substantial synthesis of two basic ideas of social and reflective and cultural-historical approaches. The substantial synthesis of the idea of the cultural-historical approach about the mediated essence of man and mediating as the essence of human development (L.S.Vygotsky, B.D.Elkonin) and the idea of the socialand reflexive approach about development as a sequential change of the types of mediating (S.L.Rubinstein) allow us to formulate the idea of ontogenetic development as a sequential change of the historical types of mediating subject activities. The type of subject activity is determined by the type of mediating (the type of reflexive consciousness) that forms its basis [184],

On the other hand, the history of the development of the subject culture is a unity of two vectors: "vertical" and "horizontal". "Vertical" is a vector of origin (vector of origin; production) of the new content of object culture. "Horizontal" is a vector of formation of the new content of the object culture as a result of the "vertical" vector [18, p.56].

The history of the development of the subject culture represents the unity of the periods of origin and formation of its new content. Periods of origin are

periods of transformation of the previous quality into a new quality. Periods of formation are the periods of giving an adequate form to the emerged quality. Thus, the history of development is the unity of genesis and formation of the object culture. Since the history of development of the object culture is carried out in conditions and as a result of joint activity, it can be presented as a history of joint activity. Several periodisations of the development of joint activity have been suggested in psychology (S.L.Rubinstein, P.Y.Galperin) [89, p.205].

There is a tradition to view the true existence of man (reality of human existence) as human activity. That is, deliberate practical attitude of man to the subject world [107, p.128-135] [11, p.11] [9, p.195] [185, p.31] [186, p.303] [6, p.331] [6, p.394] [73, p.85] [27, p.45] [97, p.181] [6, p.172].

The activity is the basic unit of human psyche [9, p.194] [9, p.192], therefore the subject of the analysis should be the logic of ontogenesis of activity as a basic unit of psyche [68, p.366] [9, p.193] [9, p.199] [10, p.270].

In this regard, the following can be formulated as the main provisions of the concept of self-development.

1. A new subject activity is created by students by solving a historical contradiction between a previous subject activity and a new subject situation.

2. The way of creating a new subject activity is the interr subjecc tive constructive activity, as only in the conditions of interr subjecc tive constructive activity arises the historical reflection of individual subject activities.

3. The means of organizing inter-subjective constructive activity is (ideal form) the meaning of the new subject form. The method of producing a new value is interr subjecc tive communication, since only in interr subjecc tive communication a historical reflexion of the values of subject forms arises.

4. The new subject becomes a means of communication when the new subject form takes on the meaning of a new form of collaborative subject activity.

5. The new value is created by turning the value of the former subject form into the former form of a joint subject activity; the former form of a joint subject activity into the new form of a joint subject activity; the new form of a joint subject activity into the value of the new subject form. A new subject then becomes a sign as a means of organizing a new collaborative subject activity, and its psychological meaning becomes the meaning of a word as a means of

organizing communication.

6. In this situation, the teacher does not broadcast any meanings for assimilation, but organizes the history of genetic problem situations and their independent solution by the students themselves. A universal psychological tool for solving genetic problems is the internal logic of the complexity of subject situations, in inter-subject communication the logic of the complexity of subject activity gaining meaning. The teacher's task is to create the history of genetic subject situations, constantly creating problem situations for students. To encourage them to reflect on the historical logic of the development of subject situations, giving it importance to the historical logic of the development of their own subject activities.

The history of communication as the psychological content of the forms of the subject world of culture should be considered as a substantiation of periodization of human ontogenesis self-development, the essence of which is the creative activity of reflexive consciousness. Then the history of the development of the subject world of culture can be represented as a sequence of epochs of changing types of communication. And the historical logic of the change of types of communication can be based on the ontogenetic logic of the change of types of subject activity. It is possible to speak about following historical types of dialogue: emotional, intuitive, rational, historical.

As the internal logic of development of subject activity is the logic of change of historical types of its intermediation, it is possible to speak about the following historical types of intermediation adequate to corresponding historical types of cultures (magic, mythological, rational and historical) [187] [188] [189] [190] [191]. These historical types of culture correspond to the historical types of mediating and, accordingly, the historical types of subject activity: *sensory-mediated, perceptual-mediated, symbolically-mediated, sign-mediated. The* vector of change of historical types of activity is the "vertical" vector of self-development, the vector of formation of historical types of activity is the "horizontal" vector of self-development [18, p.58].

Sensory-mediated subject activity is a set of individual sensory actions that turn an initial reality into a qualitatively ordered set of subjects with a common property. *Perceptual-mediated* subject activity is a structure of perceptual actions transforming initial reality into a quantitatively ordered set of objects having a common property structure. *Symbolic-mediated* subject activity is a system of symbolic actions transforming the initial reality into formal classes of objects having a common subject form. ***Symbolic-mediated subject activity***

is a history of generating actions transforming initial reality into qualitatively ordered substantial classes of objects having a common logic of origin of subject forms.

Since self-development is a way to change the original historical type of mediation by creating a new historical type of mediation, the transition between stages of development is made by the student himself through creative activities. If subject activity is a way of reproducing subject culture, then creative activity is a way of producing the history of subject activities. Sensor-mediated subject activity is the subject of creative action. Perceptual-mediated subject activity is the subject of creative action. Symbolic-mediated subject activity is the subject of creative activity. Historical Intermediate Subject Activity is the subject of creative activity.

Each historical type of subject activity, created in conditions of "vertical" development vector, after its occurrence is formed in conditions of "horizontal" development vector. Thus, the form of subject activity which has arisen earlier at the next stage of the development does not disappear, and enters into structure of subject activity of new historical type taking into account new historical quality. Taking into account all the above, the general conceptual scheme of the stages of self-development as the production of subject activities can look as follows.

1.1. Sensory form of sensory-mediated activity.

2.1. Sensory form of perceptual-mediated activity.

2.2. Perceptual form of perceptual-mediated activity.

3.1. Sensory form of symbolically mediated activity.

3.2. A perceptual form of symbolically mediated activity.

3.3. Symbolic form of symbolic-mediated activity.

4.1. Sensory form of sign-mediated activity.

4.2. A perceptual form of sign-mediated activity.

4.3. Symbolic form of sign-mediated activity.

4.4. Historical form of sign-mediated activity.

The above periodization of self-development ontogenesis is an expression of the known dialectical development spiral. Here at each "horizontal" turn one

stage of activity formation is added. This happens because at each step of "vertical" development there is a new mediating form that is built on the previous ones and changes their qualitative certainty.

"Vertical" development is the result of an ideal form of substantive activity of a new historical type. The new ideal form first appears as a single one. In the process of "horizontal" development, in the process of formation, it becomes generalized and becomes adequate to its content. When the ideal form as a result of its generalization (formation) coincides with its content, the "horizontal" development is completed and a new cycle of development begins, but already on a new qualitative level.

The logic of "vertical" development is the logic of producing a new mediating form of substantive activity, expressed in the sequence of the following steps.

The first step. Constructing a new subject form by correlating the image of perception of a new subject form to reflect the history of development of subject forms. The second step. Giving a new subject form the meaning of a subject activity form as a result of testing a subject activity form in the process of establishing a relationship between a subject activity form and a subject form. The third step. The meaning of subject form is fixed in the meaning of the word as a means of communication. The fourth step: the meaning of the subject form is fixed in the meaning of the word as a means of communication. The meaning fixed in the word acts as a psychological means of "horizontal" development (formation) of new subject activity.

The logic of "horizontal" development is the logic of producing a new structure of the subject activity by means of the meaning of a new type as a psychological means, expressed in the sequence of the following steps.

The first step. Awareness of the problem of your own activity.

Step two. Awareness of the need to change the old way of activity to a new one by your own efforts.

Step three. To formulate a definition of a new form of substantive reality.

Step four. Formulate a definition of a new form of substantive action.

Step five. Formulate criteria for ordering items with a new form.

Step six. Formulate a way of ordering objects with a new form.

Step seven. To formulate a method of formative action.

Step eight. Formulate ways to monitor and evaluate the results of the formative action.

Ninth step. Formulate criteria for monitoring and evaluating the results of the formative action.

Step ten. Joint creation of means and ways of joint forming action. Joint distribution of tasks of individual formative actions. Practical implementation of individual formative actions. Mutual verification of the results of individual formative actions.

Step 11. Joint creation of a joint result from the results of individual formative actions.

Step 12. Mutual evaluation of the results of individual formative actions.

Step thirteen. Joint evaluation of the result of a joint formative action. Joint creation of a sample of the result of themative action. Mutual evaluation of the methods of individual formative actions. Joint estimation of mutual estimation of methods of individual forming actions.

Step fourteen. Using the benchmark as a tool for mutual evaluation of individual formative actions of students.

Step fifteen. Joint analysis of the purpose of the formative activity. Coordination of individual action processes. Individual evaluation of one's own evaluation of another individual action. Joint evaluation of the joint self-evaluation of the joint action.

Step sixteen. Joint formulation of the objective of the formative activity. Individual creation of means and ways of formative activity.

Step seventeen. Individual self-evaluation of their individual activities in collaboration. Individual self-assessment of their individual activities in collaboration. Individual assessment of own self-esteem.

Eighteenth step. Individual creation of means and ways of forming activity.

Nineteenth step. Individual creation of a benchmark for the result of formative activities.

Step 20. Individual analysis of the purpose of formative activities and formulation of tasks of formative activities.

Twenty-first step. Individual formulation of the objective of the formative

activity.

The peculiarity of all development concepts available in modern psychology (and one of the main problems of modern psychology) is that they are all concepts of "horizontal" (or "functional") type of development [183]. As a proof of this assertion, an analysis of the basic mental mechanisms which are the basis of these concepts and which act as mechanisms of appropriation of social experience can be offered. There are two such basic mechanisms: the mechanism of causal mediating and the mechanism of sign mediating.

Causal mediating mechanism ("external causes through internal conditions") (S.L.Rubinstein)) by its nature is not a mechanism of origin of new quality (new content). The essence of the mechanism of causal mediating is the translation of the form through the chains of inductive reflection [183]. In the mechanism of causal mediating, the leading component is the mediating of external causes by internal conditions.

Internal conditions in all historical types of interaction (physical, chemical, biological, social) act as the main criterion that determines the possibility of interaction and mutual reflection. Proceeding from this, only those objects, which have adequate forms, can enter into interaction (only objects having physical form enter into physical interaction; objects having chemical form - enter into chemical interaction; objects having biological form enter into biological interaction; objects (subjects) having social form enter into social interaction).

This means that the possibility of causal mediation as a mechanism of interaction is determined by the relationship between the forms of cause and object to be caused. If these forms are inadequate, there is no mutual reflection and no interaction. If these forms are adequate, then reflection occurs and interaction is carried out. Any interaction is a mutual influence of the cause form on the form of the causal object, as a result of which the form is generalized.

In the process of causing and resulting inductive reflection providing causal interaction, no new forms are produced (does not occur). The forms available before the interaction, which serve as criteria for the possibility of interaction, are generalized. In other words, they acquire an increasingly general, more and more adequate form. Consequently, causal intermediation as an inductive reflection mechanism, which is a mechanism of translation of forms through chains of causation, cannot be considered as a mechanism of "vertical"

development (as a mechanism of origin of new forms). It is an inductive formation mechanism, as a result of which the initial subjective form (internal conditions) is more and more generalized in the logic "from single - to universal". Such formation is a "horizontal" (or "functional") development.

The mechanism of sign-mediating (the mechanism of mediating objective ideal form by subjective ideal form) by its nature is also not a mechanism for producing new forms. The essence of the mechanism of sign-mediating is the translation of the objective ideal form into the subjective ideal form of the subject activity in the process of deductive (leading) reflection due to imitation [183].

This means that the possibility of sign-mediating as a mechanism of deductive reflection is determined by the ratio of adequacy of objective and subjective ideal forms. If the ideal forms are inadequate, then deductive reflection will not occur and subject activity will not take place. If the ideal forms are adequate, then deductive reflection will occur and subject activity will not take place.

No new forms are produced (not created) in the process of subject activities carried out under the deductive reflection mechanism. The subjective ideal form (personal sense) available before the subject activity, acting as a criterion of the possibility of the subject activity, is formed (summarized) as a result of assignment of the objective ideal form. Consequently, sign intermediation as a mechanism of deductive reflection ensuring the implementation of the subject activity cannot be considered as a mechanism of "vertical" development (as a mechanism of origin of new forms). It is a mechanism of deductive formation, as a result of which the original objective form (the ideal form of culture) is increasingly concretized in the logic of "from the abstract to the concrete". Such formation is also a "horizontal" (or "functional") development.

Thus, neither inductive reflection nor deductive reflection imitation produces new forms, but is inherently designed to reproduce existing forms and, through either inductive or deductive reflection, to ensure their generalization as a result of formation.

The problem of origin of new ideal forms can be solved only by abandoning the external (social) nature of man and adopting a provision on the historical nature of man. If a social person is able to appropriate social opportunities and turn them into determinants of individual development, the creative person is able to generate individual determinants of self-development and then, as a

result of generalization, turn them into social opportunities.

A person capable of self-development is able to produce new forms of activity. This means that in a single process of self-development, the production of new forms ("vertical" vector of self-development) is the leading one, and the generalization of original forms is subordinate ("horizontal" vector of self-development). The main theoretical problem of development psychology is the problem of new forms of activity.

3.3.4 Manufacture of ideal forms as a means of generating determinants of self-development

According to the guidelines of the concept of self-development, in order to register an empirical fact, a person must first create an adequate idea. Before starting to produce and analyze new empirical facts, a human being should reconstruct his consciousness, create a new conceptual scheme, a new concept. In general, the human being, as a subject of self-development, acts and produces things according to those concepts that he constructs in communication with other people. These notions are created by the human being himself, not borrowed, not appropriated from the social reality [181, p.269], as the required social reality does not exist yet, and it itself should be built, constructed [88, p.27].

From the point of view of the concept of self-development, the main role in human ontogenesis is played by the creation of a new social experience (sensual and rational), different from that accumulated by previous generations [180, p.193].

In culture-promoting education, the process of creating new social experience occurs as a process of generating new values (knowledge) by the students themselves. In this sense, cultural birth is self-education. In creative activity the pupil under the guidance of the teacher creates new knowledge, which, based on his subject-object nature, depends on the actions of the pupil in the sense that it can arise only as a result of the pupil's own generating activity [192, p.83-96].

Self-education, which is the main way of origin of new knowledge as a result of the generating activity of the student, is directly related to the conceptualization of a new empirical situation and the subsequent empirical confirmation of the created concept. Self-education is understood as students' independent creation of new knowledge in the form of new values. The creation of new meanings by the students themselves is the essence of self-

education (cultural birth).

The specificity of the concept of self-development is that the creation of specific knowledge is based on the preliminary creation of abstract knowledge. Concrete knowledge is derived by students from abstract knowledge as a single basis created in the form of a hypothesis by students themselves in a problem situation.

Therefore, it is necessary to start further self-education (as cultural birth) with a problematic situation. With the contradiction between the new empirical reality and the previous conceptual knowledge. As a result of solving the problem situation, the former abstract knowledge turns into the new abstract knowledge, from which concrete knowledge is deduced as from the common basis, on the basis of which the new empiricism is produced.

The specificity of the cultural nascent process of self-education consists in the fact that the process of self-development begins with the task of a problem situation, the means of solving which are created new opportunities (new conceptual knowledge; new type of values). These new possibilities act as determinants of self-development that takes place as a transformation of new possibilities of subject activity into its new reality. The process of creating ideal forms is the main component of self-development and represents a way of creating determinants of self-development of man as a creative being. Man's self-development ends with the creation of a new social experience, the content of which are the values of a new type and the form - sign systems of a new type [88, p.94].

Cultural birth is one of the main factors of pedagogical activity [88, p.16], along with the task of problem situation, organization of independent creation of ideal forms, creation of new subject matter with the help of ideal form as a means, etc. Cultural birth is an internally necessary moment of organization of the process of self-development of creative abilities of a historical person in a child. The result of cultural nascent activity, in the course of which new knowledge (values) are produced, is the creation of new determinants of his/her self-development [88, p.30].

The student's self-development is carried out in conditions of special creative activity aimed at creating new human abilities. From the outset, this activity takes place in a special atmosphere of student-centered, adult interaction with the student. If the subject of creative and creative activities is an ability, we can talk about self-education as a universal form of self-development.

The content of self-development is qualitative changes that occur in the structure of the subject activity in the transition from one historical type to another, and in the structure of its abilities. For example, in an intuitive type of subject activity, the main ability is intuition, while in a rational type of subject activity - reflexion. The peculiarity of creating new abilities is that it is carried out by a student only in inter-subject activity with other students, organized by an adult.

A pupil can perform an act of self-development, construct a new type of his own consciousness only in cooperation with other students. The new historical type of consciousness arises as an "inter-subjective product" of inter-subjective constructive activity, the way of organizing which is cultural generation.

Inter-subjective communication is a prerequisite for the process of creating a new social experience for students. Initially, it arises as a necessary and universal condition for the organization of inter-subjective constructive activity. Human self-development takes place through the creation of new historical forms of consciousness. Such self-development is carried out as a transition from the former historical form of the subject activity to its new historical form as a result of inter-subjective constructive activity. This transition is the process of going beyond the former historical form of the reflexive consciousness as a result of the creation of its new historical form [184].

In the process of production of new historical forms of subject activity the man in communication with people creates new forms of human culture and in the process of such creation develops himself as a creative man [88, p.22]. In the process of human self-development the role of the community radically changes. It consists in the fact that a new type of psyche is first produced jointly in an inter-subject form, which is then transformed into an individual psyche of each person.

The creation of new historical forms of the object culture is carried out in the course of inter-subjective constructive activity, the essence of which is the production of new historical forms of reflexive consciousness as a fundamental mental ability [82, p.117]. This process results in the production by a person of his or her own abilities as new universal abilities.

In the process of cultural birth, each person creates new means and ways of consciousness. The ability to act creatively in problematic situations is not initially given to a person. Therefore creative activity is created simultaneously

with a new type of reflexive consciousness. Only in this case it becomes possible to create a new subject reality of culture. These transitions are carried out through cultural creation.

On the one hand, a child develops and forms a special "self-creative" creative activity; on the other hand, on its basis, it produces new historical forms of reflexive consciousness as its basic ability. These two processes constitute a universal form of the child's selffdevelopment.

The creative nature of man presupposes that in a historical society every member of the human being should be prepared from birth to be able to create new abilities and new norms of social joint activity corresponding to them. Creation of socially significant abilities by an individual is a special (creative) activity, objective goal of which is production of abilities of human kind in the form of production of individual abilities.

The reality of creative human abilities is the history of the subject (material and spiritual) culture. Therefore the creation of abilities is a creative activity of the man himself to create a new subject culture [88, p.28]. This activity should be adequate to the human abilities, which are marked in the new history of the subject culture.

In order to identify new abilities to make them universal, a person must become a creator of the subject culture, and this is possible only through other people, in inter-subjective communication with them. Only in inter-subject communication can a person build adequate creative activity. By its function, this process is self-education.

The production of adequate ways of creatively creating a subject culture can only be achieved if the student is included in a lively communicative relationship with other students and adults who organize cultural production as a means of generating a subject culture, and thus contribute to his or her ability to build and rebuild his or her own attitudes and norms.

Since by its nature creative activity is a way of generating psychological tools (signs), the first stage of cultural creation (the beginning of "birth") is a direct (real) communication of students, organized by an adult, in which the adult organizes the independent creation of the first, primitive signs by students.

Proceeding from the general logic of historical development, in the system of cultural nascent education, first of all, the situation that determines the necessity of a child's transition to a new historical form of subject activity,

connected with the impossibility to act adequately in the situation of a new subject culture, and secondly, the situation of creating a new subject activity, comes to the fore.

The internal connection between cultural origins and self-development is expressed in the notion of "historical space of possible self-development". The main hypothesis assumes consideration of cultural birth as a means of self-development.

Cultural birth is the factor ensuring self-development, without which self-development becomes impossible. Cultural birth as a way to create new opportunities (new ideal forms) is a factor ensuring self-development by its determinants. As a result of application of ideal forms of subject activity created as a result of cultural creation as a means of self-development, the real form of subject activity changes. It becomes adequate to the new subject situation, which allows a person to act effectively in the new conditions of the new subject culture. This is the fundamental role of cultural nucleation in self-development [193].

New ideal forms (new values) set the historical space for possible self-development and act as new opportunities (determinant of self-development). Reflexive consciousness, transforming the new possibilities of subject activity into its new reality, completes the qualitative self-change of subject activity, completes the act of human selffdevelopment [88, p.22.

In terms of the concept of self-development, the creation of new ideal forms is provided by the processes of transcending [194]. The area of transcending processes sets the historical space for possible self-development of a student. Optimal terms of cultural birth as the creation of new ideal forms are set by the historical space of possible self-development.

If the required (potential) ability to create new ideal forms exceeds the existing (actual) ability, then the need to create new ideal forms (new values) becomes a decisive factor in the child's self-development.

Self-development, carried out in the process of culture-thinning as a result of transcendence, is the transformation of the previous historical content of the psyche into its new historical content. The transformation of the former level of actual development into the historical space of possible self-development, and the historical space of possible self-development into the new level of actual self-development is the essence of student's self-development [88, p.26].

The concept of self-development is a way to include man in the historical process of self-moving of the subject world (nature) as its source. The concept of self-development considers man as an internal force of nature, the internal source of its self-motivation. Man by his creative activity produces new opportunities and turns them into a new reality. New possibilities of nature emerge as new possibilities of man (human activity) as a result of solving genetic problems. This gives grounds to speak about new, creative psychology of self-development as one of the variants of new fundamental psychology [195, p.153] [196, p.423].

"Vertical" ("age") vector of self-development is a qualitative self-change ("self-constructor"; "self-development": "... Man is an artificial, self-constructed being" (M.*K.Mamardashvili*) [2, p.146]. Such self-transformation occurs at the expense of creation of new possibilities by man himself. Human capabilities exist as ideal forms of his activity. Therefore, the problem of origin of new possibilities is the problem of origin of ideal forms. Ideal forms created by a person are psychological means of self-development, means of his or her qualitative self-change. Self-development is self-determined development. I.e. development, which occurs as a result of creation by a person of the determinant of his own development.

Conclusions on the third section

Creative mediation (subjective reflexion as a ***reconstruction of a new ideal form as a means of constructing a new real form***) is the basic mechanism for producing ideal forms as "internal" determinants of creative activity. As forms in which human self-development takes place.

By self-development we mean qualitative self-change of a person by means of production of new historical forms of subject activity. As a means of self-development is the history of the object culture development. All historical forms of object culture (past, present and future) are united by a common way of origin - creative activity and its mechanism of creative mediating (subjective reflection).

As a criterion for distinguishing historical forms of object culture are the types of values produced by corresponding creative activities and reproduced by corresponding subject activities (sensory type of value - ***sensory scheme***; perceptual type of value - ***perceptual structure***; symbolic type of value - ***logic of form reproduction***; historical type of value - logic of form ***production***.

The integrity of the history of the subject world of culture is ensured by creative

activity as a universal way of self-development. Creative activity as a universal ability of a person is the essence of the self-development of the subject world and, at the same time, is the essence of a self-developing person as a subject of creative activity.

Human universality as a subject of creative activity is determined by the relation between the way of self-development of an individual subject and the way of self-development of the subject world. The human being as a universal subject acquires the property of universality because he produces the ability common to the subject world and to all individual subjects - creative activity at the expense of constructing the logic of culture (historical meaning of the history of the subject culture). The universal human being produces the universal in a single form.

The determinacy of the self-development of the subject world as a transition from one historical form to another can only be "internal". Therefore, self-development is only possible under conditions of creative activity, the essence of which is the generation of new determinants (ideal forms) by creative activity.

The purpose of creative activity is the ideal form through which the subject world of a new culture is born as a psychological means. Creative activity is a way to produce meanings and with their help as psychological means - the production of signs.

The human being as a subject of creative activity generates himself as a subject of subject activity as a result of creative mediation. Creative activity as the ability to turn the former ideal form of subject activity into the goal of constructive activity is the main ability of a universal person necessary for self-development. By his constructive activity, the universal human being produces historical reality as the unity of subjective and objective reality.

The special specificity of human beings as a subject of creative mediation (as a subject of creative activity) is that, possessing historical consciousness, he produces ideal forms, thanks to which he becomes a creator, creator of his own history as the history of the subject culture, sociality and history of the subject world.

Man as a subject of creative mediation is the producer of the ideal form, which he himself, as a result of creative activity generates, and therefore beyond the limits and boundaries of which he is able to go.

From this point of view, the self-development of the universal human being is determined by the ideal form that he builds himself (creating from his consciousness and will), so the creative determinacy of man has an "inner" nature. In this case the processes of self-development become processes of human origin [68, p.134].

4. THEORETICAL AND METHODOLOGICAL BASES OF EXPERIMENTAL ORGANIZATION OF SELF-DEVELOPMENT

4.1 Participatory learning and cognitive activities as a way of assigning ideal forms

In modern psychology, a student's individual development is considered in relation to learning, which is carried out through the organization of schoolchildren's learning activities. Learning is understood as a way of acquiring new opportunities, which exist in culture in the form of its ideal forms. This view is shared by virtually all educational theorists and practitioners, regardless of their theoretical preferences and the terms they use.

Regardless of how the link between learning and development is presented (if recognized), development is always seen as determined by cultural ideal forms. This is the case both for concepts that affirm the leading role of learning in mental development (cultural-historical concepts) and for concepts that view learning processes as coinciding with development processes (social-reflexive concepts).

Both these points of view, which potentially include all possible psychological concepts of development (and learning), proceed from the assumption that a person acquires new opportunities by appropriating them from the social reality either by the mechanism of causal determinacy (reflexive concepts of the psyche) or by the mechanism of targeted determinacy (cultural concepts of the psyche) [197, p.67] [198, p.580] [199, p.585] [200, p.13-36].

From this point of view, the educational activities of schoolchildren are a way of assigning objective, ideal forms of culture to students, organized by the teacher. This scheme of origin of subjective Ideal Forms sets (determines) quite a certain character of development. Namely, the development conditioned by learning, based on the scheme of assigning ideal forms as a determinant of individual development, has "external" nature. The "external" nature of development expresses the way the determinants of development origin and their nature. That is, under conditions of "external" development, the determinants of development are not produced by students themselves, but are appropriated by them.

In this regard, the learning technologies available in psychology are ways of organizing students' appropriation of ideal forms as new opportunities and

determinants of "external" development, and by their nature cannot be used to organize self-development. At the same time, technology for organizing self-development cannot be created without a critical analysis of available learning technologies. One of the most preferable and well-known modern technologies of "external" deterministic development organization is the technology of developing learning (D.B.Elkonin V.V.Davydov).

In our opinion, this technology is a necessary starting point to substantiate the dynamics of the structure of inter-subjective constructive activity as a form of self-development organization. The analysis of the dynamics of the structure of learning activity as a subject of technology of organizing developing learning allows us to move to the construction of the dynamics of creative activity as a subject of technology of organizing self-development.

Structure of joint learning activities

It can be deduced from the structure of the subject activity [201] [202, p.632.], which acts as a subject of appropriation in the conditions of cultural-consuming educational process.

The logic of attribution is formed in the situation of the need for the student to "enter" into the currently existing contemporary subject cultural environment. In this case, as a way of assigning the normative structure of the subject activity is an educational activity, which provides a step-by-step, step-by-step mastery of all components of the subject activity.

The first step is to assign the ideal form, which is a common way of doing things. This shows a specific feature of genetic modeling (deductive) method, which is based on the projection of the abstract component of culture as a universal on a single individual reality of the student.

Structure of joint educational and cognitive activities

1. Teacher creating a problem situation.

2. Formation by the teacher of educational and cognitive motivation of pupils.

3. Formulation by the teacher of the goals (tasks) of educational and cognitive activities of students.

4. Demonstration by the teacher of the ideal form assigned to students.

5. Simulation by the teacher of the ideal form assigned to the students.

6. Teacher's organization of students' learning of the model to be assigned to

the ideal form.

7. Formulation of practical tasks by the teacher to solve them with the help of an appropriate ideal form as a psychological tool.

8. Teacher's organization of practical solution of tasks in the classroom, the psychological means for solving which is an assigned ideal form.

9. Control by the teacher (based on his own criteria) of the correctness of the way and the result of solving practical problems by the students in the class.

10. The teacher's assessment (based on his own criteria) of the correctness of the way and result of the students' solving practical tasks.

11. Monitoring and evaluation by the teacher (based on his own criteria) of the degree of ideal form.

12. Teacher's conclusions.

The structure of joint educational and cognitive activity in the concept of developing learning is most developed (Elkonin D.B. Davydov V.V. Tsukerman G.A. Rubtsov V.V.). In this concept the content, structure and structure of educational and cognitive activities are derived from the statement that the teaching is the acquisition (appropriation) of knowledge and skills [109, p.145]. Educational and cognitive activity (teaching) is a way of purposeful assimilation (attribution) of knowledge and skills [109, p.146]. The concept of learning and cognitive activity is derived from the concept of "education", which is a way of transmitting (transmitting) social experience from previous generations - new. The main specificity of the concept of developing education, which determines its leading position among modern psychological and pedagogical concepts, is that the content of learning activity is theoretical knowledge, not any social experience [109, p.146].

The peculiarity of educational and cognitive activity in the concept of developing learning is that it is built not in accordance with the method of origin of theoretical knowledge, but in accordance with the method of their presentation, which is the logic of "climbing from the abstract to the concrete" [109, p.151]. Therefore, educational and cognitive activity is determined by theoretical knowledge as a product of social activity, which is "ready-made" [109, p.151]. (as "theoretically abstract") already exists a priori in social experience.

The essence of educational and cognitive activity is that students do not create

this theoretical knowledge, but assign it [109, p.152]. Therefore, by its nature, educational and cognitive activity is culturally consuming and therefore learning should be constructed so that it recreates the historical process that once led to the formation of a system of specific knowledge as a result of the reproduction of their common theoretical basis [109, p.152]. It follows that in the concept of developing learning, learning and cognitive activity is not a way of producing new theoretical knowledge, but is a way of reproducing it as a result of imitation.

In the concept of development training, learning and cognitive activities are a system of consistently performed actions. The psychological basis of educational and cognitive activity is the student's **need for educational and cognitive activities** (activities of assignment). The content of educational and cognitive activity is theoretical knowledge [109, p.157]. The need in educational and cognitive activity turns into the **motives of learning activities**, the content of which are the ways of reproduction of theoretical knowledge [109, p.157]. The action of **accepting** from a teacher (or, at later stages of educational activity, an independent formulation) a **learning problem, which** sets the character of subsequent learning activities, as a result of which the development of the student takes place [109, p.157] [109, p.158] [109, p.159] [109, p.182].

The action of **transforming the conditions of the learning task**. As a result of this action, a universal attitude of the object under study is revealed, which later becomes the content of the corresponding theoretical concept. The peculiarity of the universal attitude lies in the fact that, on the one hand, it is a reality of a transformed subject situation and, on the other hand, it acts as a genetically initial basis (source) of all private features of the whole object. The search for this relationship is the result of thinking analysis. The peculiarity of this educational action is that initially this analysis takes the form of transformation of real subject conditions. Therefore, this ideal action is initially performed in the real form [109, p.182]. The action of **modeling**. As a result of this action, the isolated in a real form, expressing the external characteristics of the object, the general attitude is fixed in an ideal (subject, graphic and alphabetic) form, expressing the internal characteristics of the object. The educational model, first acting as a product of thinking, later becomes a means of thinking.

Effect of the relationship model **transformation** to study its properties in "pure form". Since universal relations are "pure" in the model, by transforming and

reconstructing the learning model, students study the properties of the universal relations themselves (substantial abstraction). Action of *construction of* system of the private problems solved in the general way. As a result of this action, students transform the learning problem into a system of private tasks that are solved in a common way, which was learned as a result of previous learning activities. The action of *control*. The aim is to make sure that the remaining activities correspond to the conditions and requirements of the learning task. As a result of the control, the pupil establishes a link between the operational structure of the activity and the conditions of the task and the result obtained. The control provides completeness of the operating structure of the action and correctness of its execution.

Evaluation action. Identifies whether (and to what extent) the overall way in which the learning objective is achieved is or is not being achieved, whether (and to what extent) the outcome of the learning activities is consistent with their ultimate objective. Performing control and assessment activities provides a continuous relationship between the content of one's own actions and the task at hand (reflexion). Thus, learning activity is a way of forming a reflexive consciousness [109, p.160].

It follows from the above that in the concept of developing learning and cognitive activity (teaching) is the process of appropriation (assimilation) of a common way, which is the principle of organization of any action. The peculiarity of such educational and cognitive activity is that the solution of the actual practical problem is carried out only after the assignment of a common method (principle) [109, p.184].

In the conditions of educational practice, educational and cognitive activity takes place in its formation three main stages.

The first stage. When students master a practical action, they turn a practical task into a learning and practical one. To turn a learning task into a practical one, a number of prerequisites are needed: the division of the action object and those elements that determine the way the action is performed. These prerequisites do not change the practical nature of the initial task, but make it possible to challenge students to find out the connection between the conditions and the ways of obtaining the result. I.e. to identify an intermediate goal (task) in the activity. If this goal is maintained by making the conditions for the performance of the activity more complex and if its achievement becomes the main subject of the teacher's control over the assessment, it becomes relatively independent.

Thus, the initial task becomes an educational and practical one and a new (cognitive) action appears in the practical activity of the pupil. In these conditions, pupils identify and intensively master the main learning actions - the transformation of the situation of the given problem and modeling [109, p.170]. Conversion of the initial practical problem into a practical problem is possible only in the process of a jointly distributed activity of students and teachers [109, p.176].

Step two. The culminating point in the allocation of learning activities proper is the inclusion of *concepts in* the activities. Since educational actions are singled out as a component of formed practical skills, the question of when and how concepts can be included in this process is a special problem [109, p.177]. At the second stage, the concept is included in the situation of an educational and practical task, which qualitatively changes its subject content and psychological structure. In order to solve a private practical problem, a student has to investigate its conditions from the point of view and with the help of the introduced concept: to select the corresponding elements in the object, to analyze their relations, etc. In other words, it is necessary to make subject and educational tests and modeling. The links established between them as components of the solution turn an educational and research *task* into an educational and research task [109, p.178].

Step three. Related to the transition to the analysis of the concept as a developing system. Studying the conditions of a systematically expanding system of practical problems, a pupil must derive a system of concepts, which means the allocation of *educational-theoretical problem* in the activity. In process of mastering methods of derivation of system of concepts psychological conditions and mechanisms of educational activity are gradually reconstructed [109, p.178].

Collaborative learning activities as a psychological concept.

The methodological basis of the concept of "joint educational activity" is the Marxist concept of "joint activity" [203, p.88], which is based on the genetically initial concept of "interaction". [204, c.305]. Interaction implies mutual influence of the participants in the interaction on each other [204, p.305]. At the same time, the main characteristic of any interaction is the activity of participants in joint activities [204, p.306]. It is believed that activity is an essential characteristic of man as the highest form of development of living matter [204, p.306].

The following are considered as the main features of joint activities: the presence of a common goal and common motivation (motivation to work together), the division of activities into functionally related components and their distribution among the participants, the unification of individuals and individual activities and their coordinated implementation, the presence of management (including self-government), common end results, as well as the presence of a common space and simultaneity of individual activities [203, p.93]. As for the question of the psychological structure of joint activity, at present it is the least developed [203, p.94].

The mechanisms of mental infection, imitation, suggestion and persuasion, recognized in foreign and domestic psychology, are cited as the main mechanisms ensuring interaction [203, p.112].

As far as learning activity is concerned, it should be borne in mind that the concept of "learning activity" is still rather ambiguous [204, p.192]. However, recently learning activity (learning interaction), based on the activity of all participants in joint learning activities, has been interpreted as subjecttto-subjective interaction, which forms an aggregate subject characterized by a common goal [204, p.309].

In psychology, the development of the problem of social interactions and their role in learning is based on the hypotheses of L.S. Vygotsky, J.G. Meade and J. Piaget that social interactions play a decisive role in the development of thinking [205, p.10]. According to J.G.Meade, the formation of the human "Ego" takes place in a situation of communication, and the interiorization of the dialogue is the source of its thinking activity [205, p.12]. In the late 70s - early 80s of the 20th century, the experimental study of the problem of social interaction and learning is transferred to the classroom and focuses on the study of the effectiveness of the organization of educational interaction between teacher and schoolchildren, the schoolchildren themselves [205, p.19].

In V.V.Rubtsov's opinion, the active role of the interaction itself as a mediating factor in the process of cognitive development excludes the passive position of any of the participants of the interaction "teacher-student" and makes the imitation mechanism as the main mechanism of learning unsound [205, p.15]. The author believes that children can develop as a result of social interactions when their actual level of development corresponds to it. Bearing in mind that the actual level of development is the result of past social interactions [205, p.15].

According to the author, we are present in the process of developing a vision of learning as a process of facilitation and collaborative action. At the same time, the main mechanism of this process is to mediate cognitive actions by means of interaction of the participants themselves. That is why the main challenge is not to teach, but how to teach. That is, the problem of organizing effective joint forms of learning activity [205, p.16]. Experimental data allow the author to assert that imitation is not a development mechanism, but a social and cognitive conflict between the points of view of individuals [205, p.17].

Based on the results of his experimental studies, V.V.Rubtsov believes that the well-known psychological structure of educational activity (D.B.Elkonin V.V.Davydov) should be supplemented. It should include: inclusion in the activity of various models of action and their mutual cooperation, joint modeling of models of joint activity given to adults, as well as communication and mutual understanding in the process of assistance and search for new ways of organizing joint work [205, p.24].

Among the unresolved problems of joint educational activities, V.V.Rubtsov notes the problem of correlation of group and individual forms of education, the problem of acquisition of educational groups, the problem of taking into account the individual characteristics of students and some others [205, p.25].

G.A.Zukerman believes that it is impossible for a child without samples to discover the meaning and method of action with any human tool or sign. He can master these samples only in joint action with an adult, the carrier of these samples. In her opinion, the way (mechanism) of substantive and effective cooperation between a child and an adult is imitation (imitation, acting on a sample) [206, p.13].

She believes that there is a need to distinguish between two types of neoplasms in the individual development of the child. Those related to mastering the new subject matter and those related to mastering the form of cooperation [206, p.20]. At the same time, introducing a new form of cooperation, it is necessary to give a sample of it [206, p.159]. From this point of view, the ability to learn as a strategic goal of modern education is a new formation connected with mastering the form of cooperation [206, p.21].

The author considers that the basis of learning activity is a situation where a child and an adult solve learning tasks together. Such joint decision becomes possible when the educational interaction of the child and the adult is single subject. When they have a common task and a common system of relations

[206, p.42]. The author cites discussion as the primary form of learning cooperation, in which a child's independent viewpoint becomes possible [206, p.141].

T.V.Gabai believes that training activity is a joint activity in which one of its participants gets experience ... ...and others create favorable conditions for it. In other words, they carry out the whole sum of preparatory components of assimilation [21, p.116]. Its point of view is based on S.L. Rubinstein's position on education as an inseparable single process, which is carried out as a two-way and social process of knowledge transfer, communication and assimilation [21, p.122]. In this connection, S.L.Rubinstein called the teacher "the transmitter of a certain material, communicating it to the student" [207, p.607].

I.I.Ilyasov has a similar position, who uses the concept of "social experience transmission activity", which means the transfer of experience to the younger generation of people. As the first subsystem in this approach, "teaching", understood as the activity of a teacher, is considered. The second subsystem of translational activity is "learning activity" (or "teaching"). This activity is carried out by students themselves and consists in changing the content of their previous experience [21, p.122].

V.J.Lyaudis notes that in modern psychology, despite their fundamental role, the categories of interaction and joint activity of teachers and students remain the least developed [208, p.49]. She believes that joint learning activities are acts of exchange of actions, operations, as well as verbal and non-verbal signals of these actions and operations between teacher and students, between students themselves in the process of formation of learning activity [208, p.50].

According to V.J.Liaudis, the basis of joint activity is the meanings and goals that implement them, which form a single semantic field of the joint doctrine [208, p.50]. The purpose of the joint teaching activity of teachers and students is to build a mechanism for self-regulation of the doctrine. Mastering the subject activity and the very influences and positions of the individual in them [208, p.52].

V.J.Lyaudis distinguishes between adaptive and productive type of training organization. The productive type is provided by a different logic of constructing the content of the assimilated activity. In this case pupils become in a situation of receiving a socially significant and culturally valuable product from the very beginning of learning a new activity. In this situation the pupil faces the objective necessity of cooperation with the teacher and other students,

focusing primarily on the semantic side of the activity [208, p.54]. The author believes that in a situation of productive joint activity, an optimal zone of realization of all possibilities contained in cooperation between the teacher and students and related to the education and self-administration of personality arises [208, p.55].

S.M.Dzhakupov is developing a similar approach in terms of semantic regulation of joint learning activities. The author believes that the effectiveness of the learning process is an integral characteristic of the system of means of influence on a person, aimed at changing his mental properties in accordance with the requirements of society at a specific stage of historical development [209, p.7].

S.M.Dzhakupov considers that the psychological content of training is the joint and dialogical cognitive activity, which is formed by the transformation of teaching and learning activities into one psychological structure in the course of interaction and communication between the trainer and students [209, p.8]. As mechanisms for the formation of joint and dialogical cognitive activities are proposed docking and "linking" the initial, individual and differently directed in the form of meanings, motives and goals of teaching and learning [209, p.26]. At the same time, the author does not reveal the psychological content of these mechanisms.

On the other hand, dialogue is primarily understood as a "learner-to-learner" relationship, overshadowing the "learner-to-learner" relationship [209, p.25]. At the same time, a teacher's teaching activity is considered to consist of two components. On the one hand, it is the transfer of knowledge values to students, and on the other - the formation of their subjective attitude to this knowledge by passing on their meanings [209, p.43].

In his research S.M.Dzhakupov relies on the definition of joint activity as an organized system of activity of interacting individuals aimed at the reasonable production (reproduction) of objects of material and spiritual culture [210, p. 367] [211, p. 353]. One of the necessary signs of joint activity is the presence of a single, common goal, which its participants face [212, p.189-200] [213] [214] [215] [216] [217] [218] [219, p.106123] [220, p.26-42] [221] [222] [223] [224] [225] [226] [205] [203].

The author notes that in the specific conditions of learning as a common goal of the learner and students is an educational goal, which is necessary to be part of both teaching and learning activities. According to S.M.Jakupov, it is she

who promotes the formation of joint and dialogical cognitive activities through the synthesis of teaching and learning activities, it is necessary to interact in the learning process [209, p.46]. This process of formation of cognitive on the content and joint-dialogical on the form of activity is carried out in the process of joining and binding goals, meanings and motives of individual activities [209, p.47].

Conclusions. The analysis of the concepts of "joint educational activity" available in post-Soviet psychology gives grounds to believe that all of them are based on the Marxist understanding of joint activity and cooperation. The analyzed concepts are based on the category "interaction", the psychological content of which is the mutual influence of participants of interaction as its subjects.

The analysis of interaction shows that the internal mechanism providing it is a causal mediation (including "external causes through internal conditions"). The above analysis of the causal mediating mechanism shows that the process it provides is a process of "horizontal" development (formation), which is a translation of the form along the chains of causation. In the conditions of interaction, the subjects of interaction act as causatives and the cause is, by its nature, an "external" factor independent of the subject. Therefore, interaction is not a fundamental category that can theoretically solve the problem of self-development as production of its determinants.

Mechanisms offered by the authors of the analyzed notions of "joint learning activity": *psychic infection, imitation, suggestion and persuasion* (A.A.Zhuravlev); *dialogue interiorization (*J.G.Mead); *interiorization of social relations (*L.S.Vygotsky); *mediating cognitive actions by the ways of interaction of the* participants themselves (V.V.Vygotsky).Rubtsov); imitation (imitation, model action) (G.A.Zukerman); *assimilation (*T.V.Gabai); *translation of social experience (*I.I.Ilyasov); *exchange of actions (V*.J.Lyaudis); *connection and "binding" of* individual meanings, motives and goals of teaching and learning activities (S.M.Jakupov) - by their nature there are mechanisms of translation of social experience, no matter how they may seem to differ from each other. As has been shown earlier, the possibility of translating social experience by the mechanism of causal mediation is provided by a priori knowledge, the origin of which is not discussed within the framework of the concepts under analysis.

It means that the existing concepts of joint learning activities on the basis of the category "interaction" describe the processes of individual development in

the conditions of learning (education) as the processes of appropriation of "external" determinants of individual development transmitted by the mechanism of causal mediation. Thus, it is possible to draw a conclusion that the models of joint educational activity, which take place in psychology, cannot be applied to solve the problem of production of individual development determinants. A new concept is required, capable of becoming a theoretical means for solving the problem of production of individual development determinants.

4.2 Inter-subject structural activity as a method of producing ideal forms

Such a detailed analysis of the structure of educational and cognitive activity (assignment activity) and the stages of its formation is necessary for us to justify the conclusion about its empirical nature. In the concept of developing learning there is no theoretical justification of the origin of the structure of learning activity, the need for such components and features of its dynamics in the ontogenesis process. Besides, in the concept of developing learning the educational and cognitive activity (activity of assignment) is considered to be leading only at a certain ontogenetic stage of development. This means that from the point of view of the concept of developing learning the process of "vertical" (age) development loses its integrity, is broken at every transition between age periods and there is no universal reality that connects human life together throughout the ontogenesis (of the whole human life).

On the other hand, educational and cognitive activity (activity of appropriation) as a subject-object (cognitive) attitude cannot be accepted as a theoretical means of solving the problem of self-development as a way of independent production of new opportunities. What is needed is a new category that would express the universal nature of "age" transitions and act as a universal form of self-development, which itself becomes more and more universal and "universal" at each transition. In terms of activity theory, such "universal activity" should be seen as "leading" at all possible "age" transitions of "vertical" development (between periods of "horizontal" development) as ensuring such transitions from one level of development to another, between "ages" as ensuring the change of "ages" throughout the human ontogenesis.

The nature of this category cannot be subject-object (cognitive; gnoseological), because subject-object relation is a relation of consumption (appropriation) of new possibilities, not their production. Therefore, the category "educational and cognitive activity" does not solve the problem of self-development. The nature of the necessary category can only be subjectttoooobject (generating;

historical). Thus, we are talking about universal activity as a historical (subject-objective) category, which represents the subject- (producing) attitude of a person to himself.

This subject-to-subject practical self-relation (constructive activity) is a way for a person to produce himself (his history as a subject) [227]. The history of the subject culture acts as a means and product of constructive activity. Thus, constructive activity as a historical category is a way of man's production of the history of his existence, a way of changing the quality of his being by a developing man.

The category of constructive activity is put in a basis of educational technologies of self-development as a way of manufacture of new possibilities. The main feature of such technologies is their producing (generating) character. Technologies of production (generating) of opportunities, in contrast to technologies of consumption (appropriation) of opportunities, are designed to organize individual practice as a practice of producing new social experience, new knowledge as a means of new activity [228].

The psychological basis for constructive activity, which underlies the educational technologies of self-development, is the attitude of genesis. That is, transformation of one type of subject activity into another type of subject activity. Constructive activity is considered a universal form of self-development in ontogenesis. It expresses the cultural nascent (historical) character of a person.

A creative person is a product of his own constructive activity. The history of the subject culture is the product of a constructively acting person. The history of the object world of culture acts as a goal, result and means of a constructively acting person. Constructive activity is the practical attitude of a person today to his or her future. Constructive activity is a way of human transition from one qualitatively determined existence to another qualitatively determined existence.

The relation between "historical purpose" and "historical result" is an internal relation that constituents constructive activity. The "historical result" of constructive activity is a new history of a real form of substantive activity. The "historical goal" of constructive activity is a new history of an ideal form of substantive activity.

The structure of inter-subjective constructive activity as a structure of the self-development process

The subject of inter-subjective constructive activity is, ultimately, the history of the object culture. Interdisubjective constructive activity is a way of transformation of a subject culture of one historical type into a subject culture of another historical type [3].

Since the subject of constructive activity is the history of the subject culture (the history of sign systems), as long as constructive activity can only be inter-subjective. Constructive activity as a reality of interr subjective creation of sign systems can be created only simultaneously with individual activity. In constructive activity, the inter-subjective and the individual represent a unified system of "external-internal" reality, where "external" and "internal" are mutual determinants of each other.

This provision is based on the idea of the origin of the individual psyche ("internal") as a component of an integral system only in unity with the inter-subject form of the psyche ("external"), and not "before" or "later". It differs from the position on interiorization as a way of transformation of the interpsychic ("external") into the intrapsychic ("internal") [3].

Constructive activity, the ideal form of which is the inter-subjectivity [229, p.433] (internal dialogue on Bakhtin M.M.; deep communication on Batishchev G.S.; beingness communication on Slobodchikov V.I.); communication "I" - "You" on Martin Buber; inter-subjective communication on S.L. Rubinstein); representing (on K.Marx) a "way of production of man" [19, p.142].], there is a way of cultural nucleation (production of a qualitatively new historical form of the object culture) [16, p.51] [82, p.157]. In the conditions of cultural nascent education, the situation of necessity to create a new constructive activity is set by the necessity to act adequately in the new situation of the subject culture characterized by a new type of an ideal form [82, p.95].

At the first attempts to act in a new subject situation, the problem of discrepancy between the required new real form of subject activity and its former ideal form arises. The problem entails a crisis ("age" crisis), the way to overcome which is self-development. A new type of cultural object (a new type of sign), which is a product of constructive (cultural nourishing) activity, acts as a means of self-development [3].

The objective component of the problem situation is the history of the object

culture. The relationship between the systems of "new" and "old" cultural objects has an objective character and fully defines (sets) the structure of constructive activity [3] [230, p.29].

The history of object culture as a temporary sequence of systems of "new" and "old" cultural objects is the first and initial component of the structure of inter-subject constructive activity, from which the whole structure is built. It is necessary to start building the structure of inter-subjective constructive activity, first of all, by fixing the relationship between the history of the object culture and its historical logic. The primary form of such fixation is experience (a sensual form of consciousness), which is the basis for building up the historical structure of constructive activity. As a result of the construction of the relationship between history and historical logic, history acquires historical meaning and becomes a history sign, which determines the constructive activity creating new types of the object culture [82, p.41].

Sign-history becomes a means of designing the transition between "old" and "new" types of object culture. Objectification of genetic relation in the history - sign transforms genetic relation into a means of creation of constructive activity [82 p.134]. Since a new type of the object culture is created by a *constructive activity* and reproduced by the *object activity*, if history - sign is simultaneously a means of constructive activity to create a new object activity [82, p.60] [82, p.94].

As a result of constructive activity, the inner world of each participant in the inter-subject activity is radically reconstructed, and a sign system of a new historical type is created [3]. Producing, as a result of creative intermediary, a new subject activity, as a result of which a new subject culture is reproduced, [82, p.95], constructive activity can be considered fully realized and achieved its historical goal [3].

The structure of intersubject constructive activity can be derived from the structure of transition between types of subject activities. The new type of subject activity acts as a construction subject in the conditions of the culture-promoting educational process.

The logic of constructing a new type of subject activity is formed in a situation when it is necessary to act in a new type of subject environment (in a new context [231]). At the same time, the *mechanism of constructing the* structure of a new type of subject activity is creative activity, which provides a systematic creation of all components of an integral subject activity.

In the first step, an ideal form [232] of a new historical type is created, which is a common way of working with objects of the new type. This manifests the specific feature of the method of creative experimentation, which is based on the creation of an abstract component of culture and the formation of it as a universal one as a result of inter-subjectival communication among students.

Based on this scheme, it is possible to propose a structure of constructive activity, which is created to carry out the process of constructing a new type of subject activity.

The resulting structure of inter-subject constructive activity

1. Students creating a problem situation together.

2. Students articulate the problem together.

3. Joint formation by students of a motive for inter-subjective constructive activity.

4. Joint formulation by students of goals (tasks) of inter-subjective constructive activity.

5. Joint formulation by students of criteria for monitoring and evaluation of inter-subjective constructive activity.

6. Students jointly construct an ideal form of new type of subject activity (meaning formulation).

7. Collaborative modeling by students of an ideal form of subject activity of a new type (value).

8. Joint study by students of the model of an ideal form of new type of subject activity.

9. Students articulate practical tasks together to solve them using the ideal form as a psychological tool.

10. The students of the whole class solve practical problems together using the ideal form as a psychological tool.

11. Joint self-control by the whole training group.

12. Joint self-assessment by the whole training group.

13. Analysis and conclusions shared by the whole training group.

The resulting structure of individual constructive activity

1. Individually creating a problem situation for students.

2. Individual formulation of the problem by students.

3. Individual formation of a motive for constructive activity by students.

4. Individual formulation of goals (tasks) by students for constructive activities.

5. Individual formulation by students of criteria for monitoring and evaluation of constructive activities.

6. Individual design of an ideal form of new type of subject activity (meaning formulation) for students.

7. Individual modeling for students of an ideal form of subject activity of a new type (value).

8. Individual study by students of the model of an ideal form of new type of subject activity.

9. Individual formulation of practical tasks by students to solve them using an ideal form as a psychological tool.

10. Individual solution of practical problems by students using the ideal form as a psychological tool.

11. Individual self-control.

12. Individual self-esteem.

13. Individual analysis and conclusions.

4.3 Creative experiment as a method of organizing inter-subjective constructive activity

4.3.1 Universality as a capacity for self-development

During the development of inductive (socially-reflexive) and deductive (cultural-historical) concepts of human development, expressing the social and cultural nature of man, the ideas of universality, freedom and creativity were relegated to the background and actually not used [88, p.27]. In fact, the human being is a universal being who by his actions constructs the universal universe of the subject world [139, p.38]. It is no accident that nowadays the universality

of man gradually becomes a psychological and pedagogical priority [88, p.119].

We are witnessing the formation of a new - pre-figurative - culture [233, p.39], in which adults learn from their children. From this point of view, a student should be considered not as a creature consuming the culture, but as a creature generating it [88, p.94]. Therefore, when entering a culture, a person should not master cultural patterns of activity, but the ability to generate and develop the culture itself [88, p.26].

We share the view that universal forms of culture develop in an individual way [6, p.140]. Proceeding from this point of view, the concept of self-development embodies the idea that it is not society that is the subject of generating the new, but only a human being [181, p.269] [180, p.193]. It means that the problem of self-development should be solved on the basis of the vector "from man to culture" and not on the vector "from culture to man" [88, p.28], taking into account that the *social history of* people is always only the *history of their individual development* (K.Marx) [8, p.47].

Social development takes the form of individual development, in the form of individual self-development [8, p.47]. This means that the renewal of the world takes place *from within a person*. Such renewal of the external world is a consequence of internal self-renewal [144, p.482].

A universal person capable of self-development at the expense of cultural origins has neither internal nor external borders of his development. Such a human being is a universal transcendent being [179, p.6]. In this case, the determinants of constructive activity are not natural factors (needs, social goals, etc.), but his own life created by himself [87, p.105].

The mechanism of universal human self-development is historical analysis and historical synthesis [5, p.46]. Historical analysis (historical reflexion) is directed to the past of a person's own development. Its subject is the past history of human development. Historical analysis is replaced by historical synthesis, which is a transcendence of the past history of development as a result of constructing the future history of development. Thus, the deep mechanism of self-development is the change of historical reflection for transcending [234, p.106]. At the same time, the transcending the deeper the historical reflexion is [97, p.364].

4.3.2 Creative experimentation as a method of organizing self-development

When discussing the topic of self-development, a natural question arises about the method of studying and organizing self-development [235, p.5-26]. In modern experimental psychology there are two types of experiments: natural-scientific, two-membered *stimulation* based on the behavioral scheme - *reaction,* natural-scientific, three-membered neo-Behavioristic scheme stimulation - *psyche - reaction,* and cultural-historical, three-membered scheme stimulation - *psychological means - reaction*.

A natural science experimental method.

Central to natural science psychology is the postulate of non-observability of the psyche [236, p.231]. In this connection, external behavior acts as a research material [236, p.224]. As fundamental conceptual constructs in natural-science psychology, the following are used: environment, system and interaction of environment and system. Oppositions "man and the world", "individual and environment", "active subject - environment", "personality - situation" are the concretization of the general relationship of interaction between system and environment [237] [238] [239] [240] [241, p.129-143]. In natural science psychology, the psyche is recognized as an explanatory principle. That is, psychology studies the interaction with the environment of such systems, for the explanation of the behavior of which the notion of "psyche" is necessary [242, p.8]. The attitude of a system to the environment is defined as an impact, action, act, the features of which are determined by the psychic reality. The influence of the environment on the system has an extra-psychic determinacy, excluding the case when the nature of the environment is identical to the nature of the system ("subject-to-subject interaction as communication") [236, p.234]. The system (human) produces changes in the environment and the environment in the system by its effects. Thus, the interaction is reduced to the exchange of influences [236, p.234].

The above provisions suggest that the natural science method is based on a non-gevioristic *incentive-psyche-reaction* relationship. Since this attitude in natural science psychology is understood as an interaction which is always based on the mechanism of causal mediation, it can be argued that the subject of study in the conditions of natural science experiment are the processes of formation ("horizontal development") [243] [244].

A direct consequence of the methodological neoogevioristic scheme of

interaction is the provision that in the conditions of a natural science experiment the subject of research is the existing schemes of behavior, which are actualized and formed under the influence of "external" determinants.

The neohevioristic scheme of the natural science experiment is based on the inductive method of organizing the development, which is a general method of organizing reflexive activity of reflection [245]. The reflexive activity is determined by the real form of the social cause, which represents the past result of social interaction. Reflective activity transforms the past result of social interaction into an image of reflection (image of the past). In training, the inductive method is a system of pedagogical influences carried out with the help of social means (socially significant objects) in order to form reflexive activity of reflection and its internal conditions (subjective ideal form).

The result of the inductive method is the formation of the psyche as a process and internal conditions that represent the essence of a social person (social personality). The initial goal of the inductive method is the creation of such a system of pedagogical influences, which leads to the maximum effect in the formation of reflexive activity and provides the formation of internal conditions.

The main criterion for the effectiveness of pedagogical influences that determine individual development through the mechanism of "external from internal" ("external causes through internal conditions") is the formed individual experience (internal conditions), with which all external pedagogical influences should be organized. Revealing of features of internal conditions (features of individual experience) of the concrete pupil, selection of adequate pedagogical means and methods of influence makes the essence of an inductive method of the organization of individual development.

In general, the inductive method of development organization is a reflection scheme, as a result of which mental development is initiated by a system of external influences and represents the processes of formation of reflexive activity, determined by internal conditions.

One of the main components of the organization of development is practical reflexive action, which is a way of transforming the subjective ideal form (internal conditions) into a real form of social consequence. The transformation of the objective real form of the cause as the past result of social interaction into the subjective ideal form (goal) and its subsequent transformation into the objective real form of the consequence is a reproducible process of the

formation of the psyche (reflexive activity), which leads to its generalization. This gives a person an opportunity to predict the future results of reflexive actions and act responsibly.

The inductive method allows organizing development as a process of continuous reproduction of the relationship between the system of social causes and the system of social consequences. It follows from the scheme of the inductive method that the sense of the reflex formation of the human psyche is to establish the correspondence between the system of social causes and the system of social consequences through the formation of reflexive activity of reflection. Internal conditions, which represent a generalized image of the system of past objective external social effects, represent a secondary, deterministic by them, subjective reality derived from them, called to become a means of effective human activity in a social situation.

It follows from this that the problem of development as qualitative self-change at the expense of production of determinants of own development, in the framework of inductive method can not even be posed. Therefore, the inductive method scheme cannot be used as a scheme of self-development organization.

Experimental genetic (instrumental) method.

L.S. Vygotsky proceeded in his reflections from the idea expressed by Francis Bacon: "Neither the bare hand nor the mind given to itself has much power. The work is done with tools and auxiliary means" [246, p.12] .... "» [247].

For the first time, it was L.S. Vygotsky who attempted to analyze a psychological experiment in terms of the subject's activity as an experimental subject [29]. He noted that all psychological techniques modern to him were constructed according to one scheme: stimulus - a reaction, which goes back to W. Wundt.

The normative structure of the modern L.S. Vygotsky experiment differed from the schemes of the first experiments only in understanding and using its components, and not in its formal structure. L.S.Vygotsky pointed out that the scheme "stimulus-response" considers the subject's psyche as reactive and reactivity is characteristic for lower mental functions. He considered activity as property of the higher mental functions, therefore he emphasized that the experiment on the scheme "stimulus-response" is identical to experiment in natural sciences and is adequate only for research of the lower mental functions. In other cases, the so-called "instrumental method" should be

applied, which provides for active intervention of a person in a situation, his active role, and behavior, consisting in introduction of new stimuli [29]. Thus, L.S.Vygotsky introduces a new three-part model of the experiment [236, p.252].

The scheme proposed by him has a universal meaning. It is a question of replacing the two-membered scheme of analysis common in psychology in the 20s with a new, three-membered scheme, where a third, intermediate, mediating term - stimulus-medium, or a psychological tool - is inserted between stimulus and reaction. The pathos of L.S.Vygotsky's idea consisted in that only further the inseparable three-member scheme is that minimum unit of analysis which keeps in itself the basic properties of mental functions [247, p.28].

The instrumental method put forward a new point of view on the relationship between the act of conduct and the external phenomenon. Within the general *stimulus-response* ratio *(irritant-reflex)* put forward by the natural science method in psychology, the instrumental method distinguishes a dual attitude existing between behavior and an external phenomenon: an external phenomenon (stimulus) can in one case play the role of an object, to which an act of behavior *is* directed, resolving this or that task (remember, compare, select, evaluate, weigh something, etc.).p.), in another case - the role of the means by which we direct and perform psychological operations necessary for solving the task (remembering, comparing, choosing, etc.). In both cases, the psychological nature of the relationship between the act of behavior and the external stimulus is completely and fundamentally different, and in both cases, the stimulus acts in a completely different way, in a completely peculiar way determines, determines and organizes behavior. In the first case, it would be correct to call the stimulus an object, and in the second case, it would be a psychological tool of the instrumental act [248, p.105].

The instrumental method on the most essence method is historical-genetic. It introduces a historical point of view into the study of behavior: behavior can only be understood as a history of behavior (*P.P.Blonsky*) [248, p.107]. The instrumental method is a method of studying behavior and its development by disclosing psychological instruments in behavior and the structure of instrumental acts created by them [248, p.108].

The abovementioned theoretical provisions give grounds to draw the following conclusion: the instrumental (experimentally genetic, genetically modeling) method is based on the methodological scheme of *stimulus - psychological*

means - reaction. It is very important to note, as was shown above, that L.S.Vygotsky himself believed that the use of a psychological remedy does not change the reflexive nature of mental processes. The role of a psychological remedy is to give an artificial direction to a natural process [248, p.104].

There are three important observations to be made in this regard. One. The three-member scheme of the instrumental method proposed by L.S.Vygotsky is, in fact, a variant of the non-hevioristic scheme with an intermediate term. The second. In this sense, and the concept of "subject activity" proposed by A.N.Leontiev, is also an intermediate term in the non-gevioristic scheme of *stimulus - activity - reaction* (*G.S.Batishchev*). Third. In cultural-historical psychology, history is understood as the history of formation, but not as the history of origin. I.e. initially, cultural-historical psychology was created as a system of knowledge providing a "horizontal" vector of development.

The above provisions give grounds to conclude that the instrumental method is also based on a non-gevioristic attitude of *stimulus - psychological means - reaction*. Since this attitude in cultural-historical psychology is also understood as an interaction (A.N.Leontiev's scheme), which is based on the mechanism of sign-mediating, it is possible to assert that the subject of study in the conditions of genetically modeling experiment is also the processes of formation ("horizontal development").

The direct consequence of the methodological non-gevioristic scheme of interaction is the provision that in the conditions of genetically modeling experiment the subject of research are the existing schemes of using the psychological instrument, which are actualized and formed under the influence of "external" determinants.

The neohevioristic scheme of genetic modeling experiment is based on deductive method of organization of individual development, which is a system of organization of subject activity, carried out with the help of special means (tools and signs), reproducing the subject culture. Subject activity is determined by the ideal form of a cultural object, which is a prototype of its method and future result. Subjective activity transforms the image of the future into its practical result.

The result of the deductive method is the formation of mediating (mental) activity, by means of which the objective ideal form is assigned. The product of such mediating activity is an object of cultural significance. The initial goal of the deductive (genetically modeling) method is such organization of the

subject activity, which leads to the maximum effect in the formation of the mediating mental activity and ensures the assignment of an objective ideal form.

The main criterion of adequacy of the organization of the subject activity, which determines the development according to the mechanism of "internal from external" (interiorization), is socio-cultural experience (objective ideal forms of culture), taking into account which all subject actions should be organized. Revealing of features of sociocultural experience, the organisation of subject actions adequate to it and makes essence of a deductive (genetically-modelling) method of the organisation of individual development.

In general, the deductive (genetically modeling) method is a general reflection scheme, in which the mental development is initiated by a system of subject actions, reproducing the reality of the actual subject culture, and represents the processes of formation of the mediating mental activity, determined by external ideal forms of culture.

One of the main components of the organization of individual development is the practical subject action, which is an indirect way of transforming an objective ideal form of culture into a cultural object of an ideal form.

The transformation of the ideal form of culture as an objective image of the future result of the subject activity (motive) into the subjective ideal form (goal) of the subject activity and its subsequent transformation into the objective ideal form of the new cultural object is a reproducible process of forming the psyche (mediating the subject activity), which leads to its generalization. This gives a person an opportunity to predict the future results of subject actions and act responsibly.

The deductive method allows organizing individual development as a process of continuous reproduction of the relation between the system of objective ideal forms of culture and the system of objective real forms of cultural objects. From the scheme of deductive method it follows the conclusion that the meaning of cultural development (formation) of the human psyche is to establish the correspondence between the system of cultural ideal forms and the system of cultural objects through the formation of subject activity. The "internal" goals, which represent the projection of external ideal forms, are secondary, determined by them, the reality derived from them, designed to become a means of effective practical action of a person in the reality of the subject culture.

It follows from this that the problem of the development of the psyche as a qualitative self-change as a result of the independent generation of the determinants of their own development within the framework of the deductive concept of development can also not be posed. In this connection, the scheme of deductive method cannot be used as a scheme of organization of self-development as qualitative self-change as a result of independent generation of determinants of one's own development.

The method of creative experiment

The need for an experimental and creative method of organizing self-development in general is connected with the fact that nowadays the subject of scientific research is not stating the knowledge of the subject world as a recreating (reproducing) objective reality, but the advanced knowledge of the subject world as a qualitatively changing (self-producing) subject. The strategic goal of science is to anticipate such forms of the subject world that do not exist at present [249, p.22] [250, p.53].

Neither inductive nor deductive methods can solve this problem. What is needed is a method that is not a method of practical confirmation of an a priori idea, but one that explains and practically ensures the production of new ideas. This means that the starting point of such a method is not the ideas themselves, but the methods of producing ideas that are then confirmed in practice [251, p.14].

The methods, the purpose of which is to confirm an a priori idea, should be replaced by a qualitatively new method [252, p.190-194], the purpose of which is to produce new ideas and goals [253, p.52-60]. Neither inductive nor deductive methods are intended for solving such a problem. The experimental and creative method is intended for the solution of this problem. The experimental and creative method expresses the idea that a person can only develop himself and that only such development (self-development) changes both the person and society as a whole [19, p.67].

The main purpose of the experimental and creative method in psychology is to ensure the development of cultural nascent abilities of an individual person [88, p. 22]. The experimental and creative method is not based on the idea of self-development as a direct self-change of the subject of development, which does not coincide with the method of changing the objective situation [87, p.19]. The experimental and creative method proceeds from the assumption that the human psyche is the relationship between historical forms of subject

activity, the products of which are historical forms of subject cultures. This method represents a special activity of the human being, generating new ideal forms (meanings; meanings).

The peculiarity of thus understood psyche is fully revealed in the situations of genetic problems, as the study of psyche genesis should be based on the concept of historical development of the subject world of culture [254], mediated by the creative activity of a self-developing person. The human psyche should be considered as a way to produce new historical forms of the subject world of culture [184].

The experimental and creative method is a method of organizing the production of historical forms of object culture using the produced ideal forms as psychological means [255]. The possibility of producing new ideal forms is theoretically justified based on the historical nature of the object world of culture and man as the source of its historical development.

In real research practice, the experimental and creative method is a method of organizing the construction of new ideal forms (new values) and with their help new real forms of cultural objects systems. Experimental and creative method as a method of planning and organizing psychological research [256] is necessary due to two circumstances.

First, due to the fact that the method of production of ideal forms can not be deductive, because deduction as an a priori method itself is based on an a priori knowledge not substantiated by the deductive method and is a method of projecting a priori knowledge on the reality of empirical objects.

Secondly, due to the fact that the method of production of ideal forms can not be an inductive method, because induction as an a priori method itself is based on inductively unjustified a priori knowledge and represents a way to transfer a priori empirical knowledge to other empirical objects.

The experimental and creative method removes the problems of deductive and inductive methods due to the fact that it considers the subject world as transforming from one of its historical form to another as a result of the constructive activity of man, producing new ideal forms as a means of self-development.

The experimental and creative method is a method of producing new historical forms of the object world of culture with the help of its new ideal forms as a means of its creation. The peculiarity of the experimental and creative method

is that it is both a method of hypothesis production and a method of producing empirical reality, which is adequate to them. Here both the hypothesis and the empirical fact are the product of the same experimental and creative method.

If the natural science method is based on induction as an attitude of transformation of facts into each other (expansion of knowledge without changing its quality) [257, p.231]. If the genetic modeling method is based on deduction as a ratio of transformation of the a priori hypothesis into facts (demonstration of available knowledge) [257, p.231]. Then the experimental and creative method is based on deduction (the ratio of transformation of facts into facts (discovery of qualitatively new knowledge)) [257, p.231]. [257, c.231]. That is why the method of creative experiment overcomes the limitations of both the natural science method and the instrumental (genetic modeling) method because it synthesizes both methods and represents their qualitatively new unity. Here, constructive deduction is responsible for the emergence of new knowledge, while constructive induction is responsible for the formation of new knowledge, i.e. for transforming it from a single one into a universal one.

5. EXPERIMENTAL STUDIES OF PSYCHOLOGICAL PECULIARITIES OF SELF-DEVELOPMENT ORGANIZATION

(for example, primary school age)

The research problem. The contradiction between "external" nature is a determinant of socially organized process of individual development and "internal" nature is a determinant of self-development.

The object of research. The educational environment as a space for organizing students' self-development.

Subject of study. Mechanisms and conditions for students to produce ideal forms of constructive activity as means of self-development.

The basic hypothesis of research. If the mechanism of assignment of ideal forms is changed to the mechanism of production of ideal forms, it becomes possible to change the externally determined development to self-development.

Private research hypotheses:

1) The determinants of individual development in modern concepts of ontogenetic development have "external" nature;

2) The mental mechanisms of ontogenetic development (causal and sign-mediating) are the mechanisms for assigning "external" determinants. In this connection, only one ("horizontal") type of development (i.e. formation) is presented in modern concepts of ontogenetic development;

3) The mechanism for producing "internal" determinants of development (self-development) is creative mediation. Self-development is carried out through the production of ideal forms (values). *Creative mediating is a mechanism of reconstruction of ideal forms of activity as psychological means of constructing its real forms*.

4) The method of creative experiment based on induction (transformation of existing facts into new hypotheses) can be used as a method of self-development organization;

5) The main indicator of the result of the change of the assignment mechanism to the mechanism of production is the change of educational

motivation from negative to positive.

Research objective. To develop an educational technology to organize self-development (design of new opportunities) in the historical educational environment.

Research tasks:

1) to substantiate the "external" nature of the determinants of individual development in modern psychological concepts;

2) to substantiate the representation in the development concepts of one ("horizontal") type of development;

3) to substantiate creative intermediation as a mechanism for "internal" deterministic development (self-development);

4) to develop the structure of a creative experiment method;

5) to test the developed educational technology in the conditions of real school education and prove the change of educational motivation from negative to positive.

5.1 Psychological bases of educational technology of designing new possibilities (self-development organizations)

Under educational technology we will understand the system of basic principles and forms of organization of inter-subjective constructive activity as a way of production of values as psychological means of self-development. The purpose of the educational technology of constructing new possibilities (organization of self-development) is to educate the ability to create new ideal forms as psychological means of constructing new real forms of subject activities [258] [259] [260] [261].

The main idea of the educational technology of constructing new possibilities is that the creative attitude to the subject world of culture arises and exists simultaneously with the creative attitude to another person. This provision is an interpretation of the well-known statement that "only in relation to another person a person exists as a person" (K.Marx, M.Buber, M.Bakhtin, S.L.Rubinstein, G.S.Batishchev).

The technology of constructing new possibilities is based on the analysis of the genesis history of the subject world of culture and the analysis of the genesis history of the subject activity. The main principle of analysis is "the principle

of direct incommensurability of historical forms of cultures". (Paul Feyerabend) The subject of genetic analysis is the logic of changing the types of subject cultures and the logic of changing the types of subject activities.

The educational technology of constructing new possibilities is a way of organizing the transition from one type of subject activity to another by transforming one type of values into another. The technology of new possibilities construction is based on the unity of two logics: the genesis logic of the subject culture (historical object logic) and the genesis logic of the subject activity (historical subject logic). The way of generation (production) of the subject activity is the inter-subject constructive activity. In the conditions of the culture-generating educational process, self-development as a transformation of the previous type of subject activity into a new type of subject activity is carried out according to the following general scheme.

The student is introduced into a problematic situation, the content of which is the contradiction between the current level (type) of the subject activity and the new type of the subject culture. The general way to solve the problem situation is to reconstruct the history of the object culture, to reveal the internal logic of the origin of a new type of object culture, to apply this logic to the object activity and as a result create a new type of object activity.

Transitions between the types of subject activities that are the subject of the technology of constructing new possibilities are periods of qualitative self-change. They serve as conditions (opportunities) of cultural generation. The cultural nascent educational process itself is a qualitatively changing process. The quality of the educational process is determined by the peculiarities of the psyche that arises and is formed in its conditions, by the peculiarities of ideal forms that serve as the means and products of such formation.

In the ontogenesis of such periods of change in the educational process there are four and each of them has its own specific methodical system with certain specific means. Thus, the integral technology of constructing new possibilities represents a changing methodical system, which at each stage of its development, solving specific tasks of the corresponding stage of the educational process, simultaneously solves the same strategic task of transforming the previous type of subject activity into the next one due to the organization of inter-subject constructive activity as a way of producing new values.

Importance is created by students as a result of inter-subject communication

organized by the teacher. The essence of inter-subjective communication is the creation of meaning as a psychological means of constructing a new type of subject activity. A new type of subject-type activity is created by students as a result of constructive inter-subject activities organized by the teacher. With the help of a new type of meaning created as a result of inter-subject communication, a new type of joint subject activity is constructed. Once meaning is produced, it becomes a psychological means of forming and reproducing subject activity, and the subject of intersubjective constructive activity becomes a sign of new subject activity.

From a theoretical point of view, the production of a new value is possible due to the following considerations. *First*, the objective basis of creative communication as a way of transformation of values of the previous type into values of the new type is an objective history of origin of socio-cultural values. *Secondly*, the subjective basis of creative communication is the history of origin of subjective (individual) values. *Thirdly*, the means of producing new values is the historical logic of the values' origin. The historical logic of the values' origin is the product of historical reflexion.

The history of the origin of subjective (individual) meanings, which is constructed in inter-subject communication, acquires historical meaning only when it becomes adequate to the history of development of objective (socio-cultural) meanings. The new meaning arises in the form of a hypothesis, which represents the supposed ideal form of a new subject activity. Inter-subject communication is a way of hypothesis production.

Inter-subjective constructive activity as a way of self-development is a way of producing a new type of subject activity by transforming the subject activity of the previous type. The subject of interr subjective constructive activity is a new type of subject activity. The purpose of interr subjective constructive activity is an ideal form of new type of subject activity. The result of interr subjective constructive activity is a real form of a new type of subject activity.

In general, inter-subjective constructive activity is a system of the following basic constructive actions.

The action of problematization. The purpose of this action is fixation of psychological contradiction. The initial means of such fixation is to experience the contradiction between the required new subject activity and the existing previous subject activity.

Action to decide whether a new substantive activity is ***needed.*** The purpose of

this action is the intention (motive) to solve the psychological problem that has arisen.

The action of correlating real forms of the previous and new subject activities. The purpose of this action is to recreate the subjective history of subject activities.

The action of turning the history of subject activities into their historical logic. The purpose of this action is to formulate a hypothesis, i.e. to assume the logic of origin of a new ideal form of subject activity.

The action of transforming an ideal form of the previous subject activity into an ideal form of a new subject activity. The purpose of this action is to apply the formulated logic to the subjective history of values in order to create a new meaning (an ideal form of a new type of subject activity).

The action of designing a new subject activity. The purpose of this action is to create a new subject activity using the created value of a new type (an ideal form of a new type). As a result we obtain a new subject activity as a product of constructive activity. All these constructive actions are carried out in conditions of psychological ***self-control*** and ***self-evaluation***.

5.2 Basic principles and basic forms of self-development organization

5.2.1 Basic psychological and pedagogical principles of self-development organization

The inter-subjective constructive activity as a practical relation of self-origination is not initially given in the form of an objectivized scheme of organization of students' activity as a model (norm) to be appropriated, but is created by them, proceeding from the structure of a problem situation. The organization of inter-subjective constructive activity is based on the following basic principles.

1. ***The subject of*** inter-subject constructive activity is the history of subject activity, the construction of which begins with the construction of a new real form of cultural object (new subject knowledge). Its psychological meaning is an ideal (psychological) form of subject activity. The ideal form serves as a psychological means of forming reflexive consciousness, the means of objectification of which are criteria formulated by students themselves.

2. ***The principle of independence of inter-subjective constructive activity***. Its peculiarity is, first of all, that it asserts independence in formulation of goals

and tasks, practical realization of set tasks, creation of means and methods, as well as criteria of both self-control and self-evaluation.

3. The *principle of the general decision*. The concept of self-development expresses the inter-subject nature of self-development (in the sense of S.L.Rubinstein and G.S.Batishchev). New individual possibilities as means of qualitative self-change can be created only together, only when we treat each other as the goals of our own activity, and not as their means. The solution of a genetic problem as a transition to the next level of historical development through the creation of new opportunities as its determinant can only be created together. Only in conditions of inter-subjective constructive activity.

4. The *principle of shared responsibility*. Following this principle makes it possible to initially set the necessity of joint work, to obtain a common result based on common criteria. The principle of common evaluation sets the necessary external conditions for the internal organisation of inter-subject activities on the basis of a common goal, common methods and common criteria.

5. *Principle of general criteria*. It is fundamental and systemic. Following this principle makes it possible to ensure the fulfillment of the main task: to make one's own consciousness a subject of self-origination (a subject of inter-subjective constructive activity). This happens due to the objectification of the reflexive consciousness in the criteria that are the subject of independent construction, formulation, and practical realization.

6. The *principle of historicity*. Self-development is a way of generating a new subject activity as a new way of constructing the subject reality of culture. The possibility of qualitative self-change lies in the unity of the historical logic of creating a new subject culture and the historical logic of self-development. The "inner" logic of self-origination is the "inner" side of the unified logic of origin of the human world, and the "outer" logic of creation of the object world of culture is its "outer" side. Historical objectivity is, on the one hand, the object condition of self-origination, and on the other hand, it is the product (result) of inter-subject activity of self-origination.

7. The *principle of equal opportunity*. Represents the principle of organization of inter-subjective constructive activity as a way of creating a new type of subject activity. In the process of creating a new historical form of interosubjectivity, each student is equal in his or her capabilities with others. Since the internal mechanism of creative processes is subjective reflection,

constructive activity can only be carried out as a process of equal creation and equal "alienation" of jointly created opportunities.

8. 8. *Principle of equal rights*. Represents the principle of organization of inter-subjective constructive activity, expressing sovereignty and the right of each student to act as he or she personally considers necessary. Together with the principles of general decision, general evaluation, and general criteria, it constitutes a system of principles that ensures the inalienable right of every student to his or her own position, point of view, and vision of how to organize inter-subjectivity. It takes the form of discussion, persuasion and compromise.

9. *The principle of action beyond the current capabilities*. It expresses the aspiration of inter-subjective constructive activity beyond the limits of actual possibilities of the existing type of subject activity and aspiration to continuous overcoming of limits of actual possibilities. It is a principle of organization of genetic problem situations, the essence of which is an internal contradiction between actual available and potentially required possibilities.

10. The *principle of personal interest*. Inter-subjective constructive activity as a method of self-origination, provided by the creation of the history of the subject culture as its means, is a reality that exists only through the self-change of each student. The new type of subject culture acts, on the one hand, as a result of inter-subjective efforts and, on the other hand, as a means of individual self-change. Since the essence of the creative person is his or her self-change, which can only occur as an inter-subject self-change, each student is personally interested in constructing inter-subject activities and in creating a new subject culture, new meanings and new knowledge as a means of their own self-change.

11. The *principle of personal knowledge*. Inter-subjective constructive activities acquire personal interest. Knowledge and meaning acquires a personal character, since it is the fruit and product of inter-subjective activity to the same extent as the product of individual activity. It depends on each learner whether or not inter-subjective activity takes place, whether or not cultural creation takes place, whether or not self-development takes place.

12. *Minority right*. Reflects the profound democracy of inter-subjective constructive activity, which is expressed in the fact that no activity (neither inter-subjective nor individual) is possible without taking into account each individual opinion, without the participation of each student. This principle expresses the right of every student to his or her own viewpoint, and the teacher

must organize the educational process taking into account different (and even alternative) viewpoints. The only way to combine the polar viewpoints is through belief and practice.

13. The *right to a point of view*. Proceeds from the above principles and is the norm for the organization of a cultural nascent educational process that takes into account polar perspectives and ensures a normal educational process that takes into account polar perspectives.

14. The *principle of free speech*. Expresses the key importance of each individual student and establishes a norm of educational organization that prevents the teacher (or majority) from ignoring the opinion of an individual student and obliges the teacher to provide a comfortable environment for each student to have his or her opinion (belief). He or she should be provided with the opportunity to express it regardless of his or her individual characteristics. However, each individual opinion must be taken into account in organizing the educational process.

15. The *principle of self-development*. Represents a fundamental, basic principle of the organization of the cultural educational process, expressing the basic idea of creative education. It is the basis for all forms of amateur activities, which are the subject of the technology of constructing new opportunities.

16. *The principle of extreme complexity of educational tasks*. Expresses the idea of transcending the limits of current opportunities by constructing new ones. Transcending is possible in adequate problem situations, the means of solving which are new opportunities. Genetic problems are problems, the psychological possibilities of solving which should be designed by the students themselves and applied for the transformation of subject situations.

5.2.2 Basic forms of self-development organization

1. *Accepting the problem situation as personal*. The form of organization of acceptance of a problematic situation as a personal one represents a historical excursion with the purpose of acquaintance of pupils with historical situations of real problems of mankind, ways of comprehension of which as problematic, and moreover, their decision at that time people did not have. Pupils get acquainted with the reasons of occurrence of genetic problem situations, with concrete social conditions of their occurrence and with a level of development of a science and scientific means of that time. Pupils become acquainted with the scientists of that time who tried to solve these problems, their biographies,

their motivation for solving these problems. Acquaintance with the historical retrospective of problems gives each student the opportunity to feel a necessary participant in the historical process and to evaluate the historical significance of his or her individual experience.

2. *Constructive discussion*. The universal form, by virtue of its democracy and universality, is particularly used at key stages of the creation of inter-subjective constructive activities, which are related to the construction of agreed schemes, criteria and means of their implementation. The peculiarity of organizing a constructive discussion is that, as a key form of organizing the creation of new opportunities, it is aimed at well-defined, concrete goals. Namely, as a result of the discussion, individual points of view must be agreed (or clearly distinguished) and a joint strategy for further interaction must be agreed upon. The main principle of organizing a discussion is to find out the true point of view of each student and, based on this knowledge, to organize independent decision making. Therefore, a teacher has no right to push, hint, or suggest a decision, and therefore when organising a discussion, his job is to ensure that every pupil has his own point of view, that every pupil is able to express his own point of view, and that every pupil participates in designing a common solution (rules, criteria, norms) for the group. The more thoroughly the discussion is organised, the more effective the overall educational process will be.

3. *Independent formulation of the problem*. The effectiveness of solving the problem depends on how adequately the problem is formulated and the practice of self-development fully depends on it. Formulation of the problem takes the form of a discussion, and it is particularly important how precisely the problem will be formulated, how actively each student takes part in formulating the problem, how personally the problem will be perceived by each student, and how precisely the general formulation of the problem expresses the understanding of each student individually. The problem is a source of inter-subjectively constructive activity, so the success of problem formulation fully determines the success of the entire campaign to further construct new opportunities.

4. *Independent formulation of hypotheses*. The solution to the problem is a way to create new possibilities (new ideal forms). That is, how new possibilities will be created (new ideal forms) and how they will be practically applied as a means of creating a new subject activity to create a new subject culture. The hypothesis is an assumption of how an existing Ideal form will be

transformed into a new Ideal form. New Ideal Forms emerge as a result of applying historical logic to previous Ideal Forms. Therefore, formulating a hypothesis and a goal in the form of a discussion essentially determines success, a concrete direction and a concrete result of inter-subjective constructive activity.

5. *Independent formulation of objectives*. The goal as an ideal form of result of inter-subjective constructive activity is the result of applying historical logic to the former ideal form. The historical logic is set in the object form by the relation of real forms of the former and new cultural objects. For this relationship to be applicable to the ideal form, it must be subjectivized. The transformation of the object form of the genetic relationship into its subjective form is the result of historical reflection. The application of subjectivized genetic relations to the initial ideal form turns it into a new ideal form (hypothesis).

6. 6. *Independent formulation of tasks*. The way of performing inter-subjective constructive activities is a system of related constructive actions. The purpose of interr subjective constructive activity is a new subject activity. The structure of intersubjective constructive activity is defined by the structure of transition between the previous subject situation and the new subject situation. Each intermediate relation in this structure of transition is a specific constructive action, which has its task in interr subjective constructive activity. The composition of actions and their temporal sequence (the structure of intersubjective constructive activity) is constructed by students themselves. Knowing the actions to be performed in order to practically perform self-change through transformation of the initial subject situation into a new subject situation, it is very important to clearly formulate intermediate tasks that would eventually lead to the achievement of the goal of constructive activity.

7. *Self-construction of self-control and self-evaluation criteria*. The criteria are the reality of reflexive consciousness reproducing the attitude of ideal and real forms of human activity. They are the key means of organizing interr subjective constructive activity, which, in fact, constituents all interr subjective constructive activity, giving it integrity, coherence, and comprehensiveness. The possibility of independent construction of criteria is set by the initial relation of the previous and new subject situations. The object form of the history of real forms of objects, subjectivized into the historical logic of the origin of values and applied as a means of transformation of the former criteria, gives the possibility to construct new criteria. A self-implemented action of

constructing new criteria becomes a guarantee of successful construction and practical realization of the whole act of self-development.

8. *Self-selecting solution benchmarks*. The initial form of criteria is a direct standard (natural sample) of the result of constructive activity. For evaluation and self-assessment it is necessary to select a standard and set it as a criterion for all students in a study group. All students participate in the discussion and each of them is required to express their opinion and justify it. The discussion results in the selection of one (or more) benchmark, which is then used as a criterion for assessing the correctness of the completed task for the whole class.

9. *Self-construction of practical solution methods*. It takes the form of a mini-discussion, which is organized by the students themselves in pairs (or other study groups). The character of the mini-discussion and the whole general work in the mini-group is a goal, which is formulated by the whole class as a result of macro-discussion. The task of the mini-discussion is to define the ways, which, in the opinion of the mini-group participants, correspond to the objective formulated by the class. Achievement of the subject goal is possible only if the psychological goal adequate to it is formulated and achieved. The psychological goal is the way of organizing an inter-subject practical action to solve a certain design problem by a study group. The result of the mini-discussion is the formulated, coordinated, and accepted by all participants of the mini-group method of the organization of interr subjective action.

10. *Self-construction of practical solution means*. It also takes the form of a mini-discussion. Each training mini-group chooses, finds or independently constructs the means of solving the practical design task agreed within the mini-group. These tools may be different for each participant in the mini-group, but assuming that each participant is equally responsible for the end result of the mini-group and makes a unique and unique contribution to it, they must be consistent with each other.

11. *Mutual control*. Inter-subjective constructive activity is built as an independent activity based on independently formulated criteria. Therefore, mutual control acts as a system-forming factor in the organization of inter-subjective activity. The necessity and essential importance of mutual control derive from the common goal and the common responsibility for the common result of each participant in a training group. The peculiarity of joint work of a study group is the necessary consistency in everything on the basis of the same and formulated criteria. Mutual control is an action of correlating the

intermediate results of one's own and other actions in order to continuously adjust the ways of solving the design problem. Mutual control is the way to correlate the general intermediate task with the general intermediate result and the individual intermediate results of one's own and another's actions. Mutual control is carried out in the form of constructive discussion, the result of which is the necessary correction of the ways of joint action adequate to the existing conditions.

12. *Self-control*. The success of inter-subject activities directly depends on the success of each individual contribution. From this point of view, self-control is a constitutive factor of both individual and inter-subject activities. Self-control is the ratio of the current task to the current result of the individual activity as well as the ratio of the current task of the inter-subject activity to the current result of the individual activity. Self-control, on the one hand, is a derivative of mutual control, and on the other hand, no individual-subject activity at all is possible without self-control. Most likely, self-control and mutual control arise simultaneously and represent two complementary sides of one inter-subject action. It is carried out in an individual form, but its necessity, methods and results are defined by the inter-subjectivity, the derivation from which is the individual-subjective activity. On the other hand, intersubjectivity, the component of which is the individual-subjective activity as a product of intersubjectivity, determines the nature of individual-subjective activity.

13. *Mutual evaluation*. Same as mutual control. The difference lies in the fact that mutual evaluation is a ratio of final goals and final results of individual-subject activities using criteria as psychological means. It is of great importance as a leading form of emergence and perfection of self-evaluation, as well as a means of reconstruction and perfection of inter-subject activity and its effectiveness. It is carried out in the form of a mini-discussion, first under the direct guidance of the teacher (which boils down to problematisation, inducement to find a solution by searching for a compromise, etc.), then the direct guidance takes the place of the more and more mediated one, passing to self-government.

14. *Self-esteem*. It's like self-control. It is a mandatory component of mutual evaluation, which is subsequently separate and constitutes an independent action. It represents the action of comparing the final goal of an individual action with an individual final result, as well as comparing the final goal of an inter-subject action with the final result of an individual-subject activity. It is a means of self-improvement through adjustment on the basis of formulated

general criteria. It is carried out in an individual form, first under the direct guidance of the teacher, and then becoming more and more autonomous. In the limit it is formed in the ability to construct one's own individual criteria and practically act on the basis of them, irrespective of other people's criteria.

15. *Self-examination*. The subject of self-analysis is the establishment of a relationship between the purpose of the activity, the way the activity was carried out, the process and the result obtained. Coincidence or misalignment of the purpose and the result serves as the basis for conclusions about the nature of the performed activity. Self-analysis is carried out as a component of mutual analysis (inter-subject self-analysis) and represents the most important link in preparation for the organization of the next cycle of inter-subject activity. It is carried out in an individual form, first directly controlled by the teacher and other students, and then increasingly mediated and switched to an autonomous individual mode.

17. *Self-practical work*. It represents the most important component of inter-subject activity, which is, on the one hand, the result of preparatory work in an ideal plan and, on the other hand, is a means of testing a new ideal form. It is carried out independently by each individual student. The inter-subject nature of the activity presupposes a constant exchange of information, but, as in all forms of organization of inter-subject activity, in the performance of the practical part of the task, none of the participants in the inter-subject activity can (does not have the right; in no case should) perform any practical work for the other. One can persuade, advise, call upon, dissuade, etc. But in no case should one do practically anything for another. This provision once again emphasizes the sovereignty of each participant of inter-subject activity and his or her right to his or her own, sovereign contribution to the joint result. This right is fixed not only ideologically, but also technologically.

18. *Self-constructing the overall solution result*. It is crucial, because the efficiency and effectiveness of the mini-group is determined by the overall result. From this point of view, none of the mini-group participants can only present the result of their action, because the overall result will be defective and cannot be evaluated positively. Also each participant cannot be guided by quality only of the individual result as even brilliant result of one individual action at frankly bad result of other individual action in aggregate will bring a negative estimation of all cumulative result. Therefore each participant is technologically compelled to be guided not only by quality of the individual result, but in the same measure it should be guided also by quality of result of

other individual action. And only in the case when both individual contributions will be of high quality will the result of the inter-subject action be highly appreciated. Otherwise, in any case, the result of an inter-subject action will always be evaluated negatively. The action of constructing the general result is key for the organization of all inter-subject design activity as a whole and takes place in the form of a mini-discussion, the purpose of which is to coordinate the general result and making this decision by all participants. Practically, the technology of general solution designing is based on the rule of prohibition to make for another, in this case, to make for another its result in the general construction of the general solution. This can only be done by the participant who received the result. Other can only persuade, call, justify or deny actions of the first, but make for it practically, i.e. for another to include in the general design of the general result of the individual result of other participant, nobody has the right.

19. *An independent substantiation of one's own version of the proposed solution result*. This form of organization of inter-subject activity expresses the sovereign right of each participant to its own viewpoint. It is fixed technologically in such a way that if the partner does not accept the substantiation, there will be no joint result. Anyone has the right to his own point of view, moreover, the result of inter-subject activity should be joint, and the evaluation of each participant is the evaluation of their joint work. All these conditions set a very controversial position for each participant, who has to balance individual and joint interests all the time and always choose and seek compromises between individual and joint. When the joint becomes a form of development of the individual, and the individual becomes a form of development of the joint, then the contradiction between individual and joint is solved simultaneously in favor of both joint and individual. When the participants do not see the possibility of solving the contradiction between individual and joint, this means technological errors that must be eliminated as soon as possible. It takes the form of a mini- or group discussion, the aim of which is to reconcile all viewpoints and formulations of one, joint, compromise.

20. *Conclusions*. They represent a way of establishing relations between ideal and real forms of interr subjective constructive activity and correlating interr subjective constructive activity with its historical mission. The conclusions evaluate both the inter-subjective activity as a whole and the peculiarities of its separate components (actions, procedures) as well as the efficiency of the basic forms of organization. At the same time, the quality of work of the whole study

group, of each individual participant in it, and of the teacher as the organizer of the inter-subjective constructive activity of the whole study group is assessed. As a result of the comparisons, ratios and evaluations, the decision is made to make necessary adjustments and changes in the nature of the organisation of the next cycle of inter-subject constructive activity.

Conclusions. As a result of the analysis of D.B.Elkonin-V.V.Davydov's genetically-modelling method of developing training organization in the concept and correlation of the results of developing training with the goals of this research, the conclusion was made that it is necessary to develop a creative-experimental method corresponding to the goal and objectives of the research. In empirical research the creative-experimental method was directly embodied in the inter-subject constructive activity of students, the subject of which was the construction of the structure of perceptual-subject activity. For organization and management (self-management) of inter-subject constructive activity a special methodical system was developed, which is a set of general and private methods that act as methods of organization of inter-subject constructive activity at different stages of its development. The methodological system itself has been modeled in the form of the basic principles of interr subjective constructive activity organization and its basic forms of organization.

5.3 Psychological and pedagogical project of the system of experimental situations of self-development

(experimental research concept)

5.3.1 Transition between sensory-mediated and perceptual-mediated subject activities as a subject of the experimental research system

The first reason for choosing this transition as the subject of experimental research is the essential difference between the processes of individual mental development, organized as externally deterministic development and internally deterministic self-development. From this point of view, the experience of "externally" deterministic ontogenesis does not help in organizing "internally" deterministic self-development, but only hinders it. Therefore, in order to avoid additional distortions of the research results by "superimposing" one ontogenesis logic on another, one should start experimental research as early as possible.

The second reason for choosing this transition as the subject of experimental

research is that at present the concept of self-development (as well as the concept of personal-oriented learning and the concept of developing learning) is not ready to answer the question about the initial stage of human development, about its first ontogenetic step.

The third reason for choosing this transition as the subject of experimental research is that the most studied and normatively worked out period of ontogenesis in pedagogical psychology is the younger school age [262] [263] [264]. It is this period of ontogenesis that was the focus of well-known studies by L.V.Zankov, D.B.Elkonin-V.V.Davydov, I.S.Yakimanskaya, M.I.Lisina and many other well-known researchers of the genesis of psyche. In addition, the classical system of education for primary school has developed a fairly stable and stable regulatory framework that provides a typical logic of learning and formation of knowledge, skills and abilities. This provides a good opportunity to correlate the results of the experimental study of the peculiarities of self-development organization with the typical results of the classical organization of development at this age.

The fourth reason for choosing this transition as the subject of experimental research is that there is an objective problem of the transition of a child from preschool to school childhood. Many authors point to the spontaneous process of formation of children's psyche in preschool age, which leads to the formation of its empirical type (for example, V.V.Davydov, V.V.Repkin and others).

As is known, this type of psyche is characterized by an orientation towards external, insignificant signs of the subject world, perceived by the child as its essential signs. A person who has an empirical type of psyche is characterized by the ability to act in a standard ("natural") way, recreating the spontaneously formed structure of activity, determined by external, insignificant signs of the subject world. Such a person is successful in standard situations, but is unable to reconstruct activity in non-standard situations. He is not able to act in a non-standard ("artificial") way.

The links between ideal and real forms of sensory-mediated ("natural") activity in the case of the empirical type of psyche are "frozen", "rigid", unchangeable, unambiguous and fixed. This is what makes it impossible in non-standard, problematic situations to flexibly reconstruct these connections into relations depending on changing external circumstances.

The spontaneous (empirical) nature of formation of the subject activity leads

to the fact that the activity is carried out on the basis of template schemes, which the child is not able to change independently in new, non-standard, problematic situations. In the situation of classical education based on the processes of assignment/imitation, for a pupil of primary school age the usual is "natural" activity on the basis of assigned "standard" ideal forms, templates, external samples.

One of the ways to solve the problem of changing the empirical character of the formed psyche is the development training, in the conditions of which the subject of assignment by the imitation mechanism are not specific empirical models of activity, but their common (theoretical) methods (D.B.Elkonin-V.V.Davydov). Having mastered these common methods, the student overcomes the template character of activity due to the fact that in a changing situation he or she is able to reconstruct concrete (single) methods of his or her own actions on the basis of the abstract principle (common mode of action) he or she has learned.

Knowledge of the general method as a principle of building any particular activity gives the student freedom from a particular situation, allows him to recreate, reproduce the generalized form of his activity of any subject from a given class. That is, it is rational (based on the notion of generalized knowledge) to treat the subject world.

But the concept of developing learning does not really solve the problem. In situations when there is a need for a new ideal form of subject activity (in a new general way; in a new abstract one), the student finds himself or herself in a "dead end" situation, which he or she cannot overcome on his or her own.

It means that there is a need for educational technologies that will enable students to master the ability to produce (produce) their own activities in problematic situations. Therefore, the idea of this experimental study is that in the conditions of the educational process, a student learns the ability not only to appropriate (through imitation) ideal forms of activity, but also to produce and produce them. To create new ideal forms.

In this connection, the structure of the act of self-development as a transition from one level of mediocrity of the subject activity to another level of mediocrity is defined as its beginning as a "rigid" initial structure of sensory-mediated subject activity, and as its end as a "more flexible", generated by the students themselves, structure of perceptual-mediated subject activity. The relation between sensory-mediated and perceptual-mediated structures of

activity is the relation of genesis. The transition between sensory-mediated and perceptual-mediated structures is ensured by the inter-subject constructive activity, which transforms the sensory-mediated structure of the subject activity into the perceptual-mediated structure due to the transformation of sensory type values into perceptual type values.

The concept of experimental research. The universal way of solving the genetic contradiction between the new historical type of the subject culture and the previous historical type of the subject activity is the inter-subject constructive activity. As a result of constructive activity, the former historical type of the subject activity is transformed into its new historical type. As a means of inter-subjective constructive activity, a new historical type of values is created by students as a hypothetical knowledge of a new type of subject activity.

The need to practically reproduce the new subject world of culture leads to the production of new tools and abilities needed for this. The possibility of solving the problem situation and producing a new historical type of meaning is enclosed in the historical logic of the development of subject forms of culture. In a problem situation, the "external" historical logic of the development of subject forms of culture is reconstructed and transformed by students into the "internal" logic of constructive activity, which is a way to create the structure of a new subject activity.

At the same time, the attitude of historical forms of subject activity is, at the limit, understood by students as the meaning of life, which is carried out in the form of constructive activities, acting for the student as a historical value.

But if the initial point of self-development is given subjectively, i.e. the initial individual subject activity, then the final point of self-development is given objectively. Namely, only the real form of the new subject matter, the ideal form of which students will have to create yet. To solve the problem, the student must transform the relationship between "old" and "new" subject forms into the relationship between "old" and "new" forms of subject activity. This possibility arises only in inter-subject constructive activity. Therefore, the main form in which individual self-development takes place is intersubjective constructive activity.

The necessity to act together leads to the necessity to construct the possibility of such inter-subject activity (its ideal form). And this, in its turn, leads to the fact that the real form of the subject world must find a common, inter-

subjective (ideal) form. The real form of the subject world should be designated by the students themselves in order to act as a general psychological means of organizing their own interrsubject activity.

This student-created meaning of the real form of the subject world is that new ideal form of subject activity which, having emerged as an inter-subjective and then transformed into an individual subject, is a means of constructing a new subject activity. Having transformed the real form of the subject world into an inter-subjective (ideal) form (i.e., having designated the subject world) as a result of inter-subjective communication and having transformed it into an individual-subjective form, each student completes the next step in his/her own self-development movement.

Thus, students build their own trajectory of self-development, objectively reconstructing the historical logic of the development of subject culture, and subjectively constructing the historical logic of the development of subject activity.

The process of self-development is a time-consuming and increasingly complex situation of producing new types of values. The possibility of such construction arises when students find themselves in a problematic situation, where both the initial point of their self-development and the final point of their self-development are set objectively, historically. In this self-development, which still objectively represents a reconstruction of the historical path already passed by mankind, students master the objective (historical) logic of cultural development as a subjective logic of self-development, as a logic of transition from one type of integrity of their subject activity to another type of its integrity. From the integrity of one quality subject activity to the integrity of another quality subject activity.

In this experimental study, the subject of the study was the situation of transition between sensory-mediated and perceptual-mediated structures of subject activity. In the real practice of experimental learning, this transition was carried out due to the creation of perceptual type values by students [265]. Possibility of creation by pupils of values of perceptual type is set by historical structure of an experimental situation. The way of solving the problem situation was the inter-subject constructive activity as a way of constructing the perceptual-mediated structure of the subject activity by means of the perceptual value as a psychological means created in the conditions of inter-subject communication.

5.3.2 Logical and psychological analysis of the experimental research situation system

The subject of logical and psychological analysis of the experimental situation of self-development is the logic of transforming the psychological structure of sensory-mediated activity, where ideal and real forms of activity are mediated by each other's "rigid" associative connection, into the psychological structure of perceptual-mediated activity, where ideal and real forms of activity are mediated by a reflexive attitude (activity of reflexive consciousness).

The initial sensory-mediated structure of the subject activity is an associative (unambiguous) connection of ideal and single real forms, which are able to reproduce in standard situations, but are not able to change and change their connection in non-standard situations. The mastery of such associative ("hard") connections allows the learner to successfully reproduce standard solutions to standard tasks learned in standard learning situations. Thus, any changes of standard situations turn subject problems for the student into non-standard and, hence, insoluble psychological problems.

Solving non-standard problems in non-standard situations implies mastering the ability to create (produce) ideal and real forms and reflexive ("flexible") relations between them. In order for the subject activity to become a way of solving problem situations, the relations between its ideal and real forms should not be "rigid", since changeable subject situations imply the need to flexibly reconstruct ideal and real forms (and their relations) based on generalized relations between them. The possibility of constructing "flexible" relations is provided by a substantial generalization of the underlying ideal and real forms of reflexive consciousness as the activity of reconstructing ideal forms as a means of constructing real forms of subject activity.

Logical-psychological analysis of the transition between sensory-mediated and perceptual-mediated structures of subject activity

The experimental situation of research is a fragment of a continuous process of self-development, understood as a sequence of transitions between one level of mediocrity of the subject activity and its other level of mediocrity due to the construction of values as psychological means of such transitions [266] [267] [268].

The process of self-development is built as a self-movement towards two vectors. The main vector of self-development ("vertical") is a change in the type of subject activity. In this direction, a new quality of subject activity

emerges. The subordinate vector of self-development ("horizontal") is a vector of simplification of the form of activity arising in the process of "vertical" development. In this direction, a new subject activity is formed.

The essence of the self-development process is a change in the level of mediation of the subject activity. As a model of the process of self-development we can consider the known dialectical spiral, clearly demonstrating two types of movement: in the "horizontal" direction - the process of formation of the subject activity; in the "vertical" direction - the process of emergence of a new type of mediation as the essence of the subject activity.

The subject of experimental study was the transition between sensory-mediated and perceptual-mediated structures of subject activity.

5.3.3 Stages of development of inter-subjective constructive activity as a form of self-development organization

The transition between sensory-mediated and perceptual-mediated levels of subject activity in the conditions of experimental learning occurred as a process of sequential construction of actions that are components of a new (perceptual-mediated) structure of subject activity. In this connection, the psychological structure of the experimental situation does not remain unchanged, but within a given structure of transition, is constantly changing.

Change of psychological structure of passing is connected with that the final (target) structure of subject activity is consistently completed with new actions and their relations. Consistent construction of the perceptual-mediated structure of the subject activity changes the psychological structure of the transition itself, which provides gradual, step-by-step reorganization of the student's psyche, consistently transferring it from the sensory to the perceptual level.

The change of sensory psyche to perceptual occurs on the basis of an internal regularity, which is expressed in the logical sequence of actions of the new perceptual-mediated structure of subject activity constructed by students. - Below is the sequence of stages in constructing the perceptual-mediated structure of the subject activity, which is the sequence of stages in organizing constructive actions as components of creative activity.

The sequence of constructing the action structure of perceptual-mediated subject activity

1. The *action of problematization*. **It** is a testing of sensory-mediated subject activity in a perceptual type subject situation. As a result of such testing, the conclusion is made about the unsuitability of the formed sensory-mediated subject activity in a new subject-perceptual situation. Psychological means of fixing a genetic problem is negative experience.

2. *Action of motivation and goal setting*. **It** represents a way of transformation of negative experience as a means of fixation of genetic problem into positive experience as a means of solving genetic problem. It consists in actualization of personal sense of constructive activity, as a result of which the polarity of experience changes from negative to positive. As a result of the change in the polarity of experience, the personal sense begins to act as a means of constructing a perceptually mediated structure of the subject activity as a motive for constructive activity, which itself is realized as value.

3. *An object-tasting action*. **It** is a way of constructing a sensory image (image of perception) of a new type of object. The possibility of such construction is provided by the necessity of joint comparison and differentiation of forms of the object world of the previous and new historical types.

4. *The action of constructing a method of comparing objects having a new form*. Represents the following sequence: fixation of the method of comparison of objects having the previous form in the word meaning; testing of the previous method for comparison of objects having the new form; as a result of the analysis of the word meaning, transformation of the previous method of comparison in a new situation. It is based on correlation of history of subject forms and history of their comparison methods.

5. *Effect of constructing criteria for comparing objects having a new form*. **It** is a formulation of definitions of "perceptual concepts" more / less of the new subject form. As a criterion is an image of perception of overlapping (overlapping) or not overlapping (overlapping) object forms.

6. *The action of practical comparison of subjects with a new form*. Represents a way of combination in perception space by certain, formulated earlier rules, two compared subjects. As a result of application of a way of comparison of subject forms the task on ordering of subjects on size of their form is solved. Thus the subject form is displayed in consciousness as the fixed image of perception. At this stage there is no way to change the size of the object form.

7. ***Action of designing a way to change (increase/decrease) the*** value of a new subject form (form of the result of practical action). Represents modeling and the subsequent formulation of the genetically based relationship, which at the perceptual level is given in the representation. This spatial relation is a "perceptual notion" underlying any specific (private) mode of production of a specific (private) size of the subject form.

8. ***Effects of designing ways to monitor and evaluate the expected outcomes of practical actions.*** **It is** a way of formulating an assertion, how to make sure that the intermediate result corresponds to the intermediate objectives and the final result to the previously formulated objective. In this way, it is a comparison of the results and the objectives that correspond to them. Comparison of intermediate objectives and intermediate results is control. Comparison of the end results with the end objectives is an evaluation.

9. ***Action to formulate criteria for monitoring and evaluation of the expected results of practical actions.*** It is the formulation of rules for the correlation of results and objectives, and the means by which results and objectives can be compared. In the conditions of the pilot study, the criteria were natural or visual means and rules, which are verbal descriptions of processes and results of direct comparison.

10. ***Action of creation (selection) of means for practical problem solving.*** Represents the process of bringing in conformity the method of formation as an ideal form of a means and the process of formation as its real form, which is determined by the method of solving a practical problem. At first, such a conformity can be obtained at the expense of selection of subjects offered by the teacher or independently found in the culture, suitable for the formation processes. But further the way of formation as an ideal form of means becomes the purpose of constructive actions, creating new means.

11. ***Action of formulating and distributing subtasks.*** Represents the result of the analysis of the final task for the construction of a larger/lesser relationship. Subtasks are two parts of the main task on the construction of a larger/lesser relationship. I.e. one subtask is a task for constructing a "bigger" relation, and the second subtask is a task for constructing a "smaller" relation. After formulating subtasks formed on the basis of the criterion of dividing the final problem into two parts, respectively, two aspects of the "bigger/lower" relation, the distribution of these subtasks for independent individual practical solution of them occurs.

12. ***The action of mutual control.*** **It is a** mutual correlation of the intermediate results of the partner's subtask solution with the intermediate tasks that the partner should have performed. Such mutual correlation is carried out on the basis of criteria that were previously jointly designed. An indispensable condition of mutual control is the impossibility of practical interference in the partner's actions.

13. ***Action of mutual and joint evaluation.*** Similar to the previous action of mutual control, the only difference is that the subject of correlation are not intermediate but final results and tasks.

14. ***Action of joint selection of the standard of the result of the task solution.*** Represents a choice (selection) visual (data in perception) samples of results of practical actions. As such samples that meet the constructed criteria, first the best works of the students, and then the samples of social activity presented in culture can act.

15. ***Action of joint task analysis.*** It represents a way of joint differentiation of two basic parts of a common final problem. The subject of the analysis is the structure of the "more/lower" relation, which represents the subject content of the finite problem, which is broken down into the components "more" and "less". Accordingly, two logical subtasks are formulated in the common finite problem.

16. ***Action of joint formulation of the task.*** Represents a way of joint formulation of the final task. By mastering the inner logic of the development of constructive activity, pupils become able to predict its next stages. Since an adequate task corresponds to each constructive action, understanding the logic of the sequence of constructive actions allows applying this logic as a joint means of forecasting and formulating final tasks.

17. ***The action of individual evaluation of joint work.*** **It is an** individual way to relate the results and processes of a collaborative activity to its objectives and ways. This correlation is based on criteria that are first formulated together and then in an individual way.

18. ***The action of individual evaluation of the creation of means and independent solution of the problem.*** Represents an individual way of making a decision (on the basis of the previously formulated criteria) about the correspondence of the practical individual solution of the final problem and the means, which were chosen for it. The basis for making such a decision is the criteria formulated earlier.

19. *Action of individual creation of a standard of problem solving*. Represents a way of creation of a visual sample of the result of the final problem solution on the basis of its ideal form, represented in the meaning of words, which serve as a means of criteria construction.

20. *Action of individual analysis of the task and formulation of subtasks*. Represents an individual way of distinguishing two basic parts of a common final problem. The subject of the analysis is the structure of the "more/lower" relation, which represents the subject content of the finite problem, which is broken down into the components "more" and "less". Accordingly, two logical subtasks are formulated in the common finite problem. Mastering the internal logic of the unfolding of constructive activity, each student individually becomes capable of predicting its next stages. Since an adequate task corresponds to each constructive activity, understanding the logic of the sequence of constructive actions allows applying this logic as an individual means of forecasting and formulating final tasks.

21. *Action of individual formulation of the task and subtasks*. Represents a way of individual formulation of the final task. By mastering the internal logic of the development of constructive activity, pupils become capable of predicting its next stages. Since an adequate task corresponds to each constructive action, understanding the logic of the sequence of constructive actions allows applying this logic as an individual means of forecasting and formulating final tasks.

The experimental research plan was a classic plan of experiment using control and experimental groups. As a control (virtual) group, students studying in the conditions of secondary schools using classical methods of development organization based on the mechanism of assignment were considered. The experimental group was made up of students studying with the use of methods of self-development organization on the basis of the mechanism of generation.

From the organizational and pedagogical point of view, the *first condition to* ensure an individual development trajectory is a different pace of development of students. This means that any student should be able to move from one level of the educational process to another (from one study group to another) at any time during the school year when he or she reaches the level corresponding to the next level of education. The *second condition* is the need to ensure that each student is able to study on the basis of an individual study plan, an individual study package and an individual study schedule. The *third condition* is the change in the basic unit of educational planning. This means that the

educational process should not be planned for a permanent study group, but for an individual student. The *fourth condition* is the necessity of abandoning the study groups of constant personal composition (classes) and the transition to study groups of variable composition. Only such structure of study groups will allow to provide organizationally an individual trajectory of self-development.

From the substantive-psychological point of view, the *first condition to* ensure an individual trajectory of self-development is the design of educational space on individual, joint and collective self-control and self-esteem. The *second condition* is to change the psychological content of the "external" evaluation of the effectiveness of individual, joint and collective constructive activities. It should be based not on a point system of marks, but on public defences of creative works and projects of students.

It should be borne in mind that one of the socially significant results of the educational environment for self-development, achieved through the orientation on individual and inter-subject culture and the constant growth of educational motivation, is, in general, a significant reduction in the time spent in secondary school. This means that the psychological and pedagogical project, especially in its practical implementation on a national scale, should provide for adequate changes in the higher education system.

5.4 Experimental situation management technology

5.4.1 Psychological structures of experimental situations

All subject situations of experimental research differed among themselves by subject components, but had the same psychological structure. The psychological structure of experimental situations was defined by the relation between sensory-mediated and perceptual-mediated structures of subject activity. This relation determined the specificity of experimental situations, the method of solving which was the inter-subject constructive activity as a method of transformation of sensory-mediated structure into the perceptual-mediated structure of subject activity.

The educational discipline "Basics of communication".

1st grade, first half, second quarter.

The theme is "Letter to a Comrade."

Psychological task.

To turn a flat space of a non-linear sheet of paper into a sign of spatial organization of written activity, the meaning of which is a perceptual image of the Cartesian coordinate system as a psychological means of organizing written activity.

Psychological structure.

The assignment. Learn to write texts in such a way that they serve as a means of organizing joint practical activities.

Motive. To convert sensory-mediated written activity (based on the structures of natural lineages applied to paper sheets) into perceptual-mediated written activity based on the pereceptive value of paper sheets (image of representation of Cartesian coordinate system as a general scheme of spatial organization of written activity).

The target. Flat non-linear sheets of paper should be designated by transforming the "living" form of joint written activity into its transformed form (psychological meaning), mediated in the geometric form of space of flat sheets of paper.

A way to achieve a goal. Communication, carried out on the basis of reflexion, as a result of which a new way of joint written speech is created, based on the general scheme of ordering the space of a sheet of paper, which serves as a perceptual value as a psychological means of organizing written activity [269].

The educational discipline "Basics of design and construction".

3rd grade, second half, fourth quarter.

Theme: "Cube deployment."

Psychological task.

To turn process of transformation of the cubic form into the flat form as a sign of design activity which value perceptual image of process of transformation of flat sweep into the cubic form as psychological means of the organisation of joint design activity acts.

Psychological structure.

The assignment. Learn to make flat sweeps of volume bodies and from them to make volume figures.

Motive. To transform sensory-mediated design activity (based on samples of

sweeps) into perceptual-mediated design activity based on perceptual value of volumetric objects (image of representation of the process of transforming the volumetric surface of the body into its flat surface).

The target. Volumetric bodies must be marked by transforming a "living" form of collaborative design activity into its transformed form (psychological meaning), marked in the form of volumetric bodies.

A way to achieve a goal. The communication carried out on the basis of reflexion of the interr subjective constructive activity, as a result of which a new way of joint constructive activity is created, based on the general scheme of transformation of the volumetric surface of bodies into a flat surface, which acts as a perceptual value as a means of organization of design activity [270] [271] [272] [269] [273] [274] [275] [276] [277].

Academic discipline "Fundamentals of Natural History".

3rd grade, first half, second quarter.

Theme: "Discrete structure of the substance."

Psychological task.

To turn the process of distribution of the substance into a sign of organization of research activity, the meaning of which is a perceptual image of the process of distribution of the substance as a psychological means of organization of joint research activity.

Psychological structure.

The assignment. Learn to plan research so that plans act as a psychological tool for organizing collaborative research activities.

Motive. The need to transform sensory-mediated research activities (based on the perception of the substance's distribution space) into perceptual-mediated research activities based on the perceptual value of space (image of the representation of the substance's distribution processes as a perceptual scheme of organizing joint research activities).

The target. It is necessary to designate the investigated space, having transformed the "alive" form of inter-subject constructive activity into its transformed form (psychological meaning), marked in the perceptual plane of space as a psychological means of organization of inter-subject constructive activity.

A way to achieve a goal. Communication, carried out on the basis of reflexion of interr subjective constructive activity, which results in the creation of a new way of interr subjective constructive activity, based on the general scheme of the investigated space as a psychological means of organizing interr subjective constructive activity [278] [279] [269] [280] [276] [281].

Academic discipline "Fundamentals of Natural History".

3rd grade, second half, third quarter.

Subject: "Mutual conversion of aggregate states of substances".

Psychological task.

To transform the process of transformation of aggregate states of substance into a sign of the organization of constructive activity, which value is a perceptual image of the process of transformation of aggregate states of substance as a psychological means of organization of joint research activity.

Psychological structure of the situation

The assignment. Learn to plan and implement processes of changing the aggregate states of substances.

Motive. The necessity to transform sensory-mediated research activity (based on the direct perception of the processes of changing the aggregate states of substances) into perceptual-mediated research activity, based on the perceptual value of the processes of changing the aggregate states of substances (image of the representation of processes of changing the aggregate states of substances as a perceptual scheme of organizing joint research activities).

The target. It is necessary to designate the investigated process, having transformed the "living" form of interr subjective constructive activity into its transformed form (psychological meaning), which is marked in perceptual model of the process as a psychological means of organization of interr subjective constructive activity.

A way to achieve a goal. Communication, carried out on the basis of reflexion of interr subjective constructive activity, as a result of which a new method of interr subjective constructive activity is created on the basis of the perceptual scheme of the investigated process as a psychological means of organization of interr subjective constructive activity [278] [279] [269] [280] [276] [281].

Academic discipline "Fundamentals of Natural History".

3rd grade, second half, third quarter.

Theme: "Concentration."

Psychological task.

To turn the process of mixing of two substances of different colour into a sign of organization of constructive activity, the meaning of which is a perceptual image of the process of mixing of two substances of different colour as a psychological means of organization of inter-subject constructive activity.

Psychological structure of the situation

The assignment. Learn to plan and practically get any given color as a result of mixing two substances of different colors.

Motive. The necessity to transform sensory-mediated subject activity (based on the perception of mixing processes of two substances of different colors) into perceptual-mediated subject activity, based on the perceptual value of the processes of mixing two substances of different colors (image of the representation of the processes of mixing two substances of different colors as a perceptual scheme of organization of inter-subject constructive activity).

The target. The investigated process of mixing of two substances of different colour should be marked, having transformed "alive" form of inter-subject constructive activity into its transformed form (psychological value), marked in perceptual model of the process of mixing of two substances of different colour as a psychological means of organization of inter-subject constructive activity.

A way to achieve a goal. Communication, carried out on the basis of reflexion of interr subjective constructive activity, which results in the creation of a new way of interr subjective constructive activity, based on the perceptual scheme of the constructed process as a psychological means of organizing interr subjective constructive activity [278] [279] [269] [280] [276] [281].

Academic discipline "Fundamentals of Natural History".

3rd grade, second half, fourth quarter.

Subject: "Mixtures and compounds."

Psychological task.

To turn the process of connection of two substances into a sign of organization

of constructive activity, the meaning of which is a perceptual image of the process of connection of two substances as a psychological means of organization of inter-subject constructive activity.

Psychological structure of the situation

The assignment. Learn to plan and practically carry out reactions of a compound of two different chemical substances.

Motive. Necessity to transform sensory-mediated subject activity of mixing (based on perception of processes of mixing of two substances) into perceptual-mediated subject activity of compound, based on perceptual value of processes of compounding of two different chemical substances (image of representation of processes of compounding of two chemical substances as perceptual scheme of organization of inter subject activity of compound).

The target. It is necessary to denote the investigated process of connection of two chemical substances, having transformed "alive" form of inter-subject constructive activity into its transformed form (psychological value), marked in perceptual model of process of connection of two chemical substances as psychological means of organization of inter-subject constructive activity.

A way to achieve a goal. Communication, carried out on the basis of reflexion of interr subjective mixing activity, as a result of which a new method of interr subjective connection activity is created, based on the perceptual scheme of the constructed process of connection as a psychological means of organizing interr subjective connection activity [278] [279] [269] [280] [276] [281].

The educational discipline "Basics of design and construction".

2nd grade, first semester, second quarter.

Theme: "Straight lines."

Psychological task.

To transform the process of comparison of two rectilinear segments into a sign of the organization of ordering activity, the value of which is a perceptual image of the process of comparison of two rectilinear segments as a psychological means of organization of interr subjective ordering activity.

Psychological structure of the situation

The assignment. Learn how to plan and practically organize the space of rectilinear segments in a given respect.

Motive. The necessity to transform sensory-mediated ordering activity (based on the direct perception of the processes of comparing two straight-line sections) into perceptual-mediated ordering activity, based on the perceptual value of the processes of comparing two straight-line sections (the image of the image of the processes of comparing two straight-line sections as a perceptual scheme of organizing inter-subject ordering activity).

The target. The process of comparison of two rectilinear sections should be defined by transforming the "living" form of inter-subjective ordering activity into its transformed form (psychological value), mediated in the perceptual model of the process of comparison of two rectilinear sections as a psychological means of organizing inter-subjective ordering activity.

A way to achieve a goal. The communication carried out on the basis of reflexion of the interr subjective ordering activity of comparison, as a result of which a new method of the joint ordering activity of comparison is created, based on the perceptual scheme of the process of comparison of two rectilinear sections as a psychological means of organizing the joint ordering activity [270] [271] [272] [269] [273] [274] [275] [276] [277].

The educational discipline "Basics of design and construction".

2nd grade, first semester, second quarter.

Theme: "Flat corners."

Psychological task.

To turn the process of comparison of two flat angles into a sign of organization of ordering activity, the meaning of which is a perceptual image of the process of comparison of two flat angles as a psychological means of organization of inter-subject ordering activity.

Psychological structure of the situation

The assignment. Learn to plan and practically carry out the ordering of the space of flat angles in a given respect.

Motive. The need to transform sensory-mediated ordering activity (based on the direct perception of the processes of comparing two flat angles) into perceptual-mediated ordering activity, based on the perceptual value of the processes of comparing two flat angles (image of the representation of the processes of comparing two flat angles as a perceptual scheme of organization of inter-subject ordering activity).

The target. It is necessary to designate the process of comparison of two flat angles, having transformed the "living" form of joint ordering activity into its transformed form (psychological value), which is highlighted in the perceptual model of the process of comparison of two flat angles as a psychological means of organization of inter-subject ordering activity.

A way to achieve a goal. The communication carried out on the basis of reflexion of the interr subjective ordering activity of comparison, as a result of which a new method of the joint ordering activity of comparison is created, is based on the perceptual scheme of the process of comparing two flat angles as a psychological means of organizing the interr subjective ordering activity [270] [271] [272] [269] [273] [274] [275] [276] [277].

5.4.2 Subject structures of experimental situations

For the organization of psychological structures of experimental research, a special organization of subject situations is necessary. Feature of these subject situations is that in their basis the historical relation (relation of genesis) lies.

It is in such (historical) structure of subject situations that the organization of self-development is possible, and it is in such historical structures that the logic of solving genetic contradictions is embedded. The logic of genetic contradictions resolution is the logic of development of the structures of subject activity, which is the logic of genesis of subject situations transformed and transferred to the development of the structures of subject activity.

Success in organizing historical subject situations predetermines the success of solving a psychological problem (constructing the transition between the previous and new levels of mediating subject activity). This section describes in detail specific subject situations that were used to organize experimental research.

First subject situation.

The educational discipline "Basics of communication".

1st grade, first half, second quarter.

Subject: *"Letter to a comrade."*

The subject matter. "Correct" to write and arrange letters, words and sentences in the flat space of the sheet so that the written speech is understandable to the partner without additional comments.

The subject "Writing to a Comrade" is almost at the very beginning of the "Language and Speech" course. It is not a stand-alone subject, but serves to organize the basic process of collaboratively solving practical educational research problems.

Its incompetence is that learning how to write is not a main task, but an auxiliary one. The main task, as always, is the practical solution of the research problem.

Thus, the discipline "Language and Speech" and, in particular, the theme "Letter to a Comrade", are the means of organizing communication and joint practical work. It uses principles and techniques typical for the organization of creative educational process in general. Namely, in this case, when teaching writing, the absence of any "matrixes" - samples of space, setting the character of written activity, is of fundamental importance.

This means that the requirement to learn to write on non-linear paper must be met.

The need to organize practical inter-subjective work forces students to "depict" their individual letters in such a way that their outline and meaning are clearly understood by everyone.

This approach leads to the fact that learning the letter on non-linear paper, children all the time write in the same album for drawing. This is so that they themselves can regularly assess the quality of their writing and work on its perfection.

The demonstration effect that we sometimes used is that after a while the quality of writing on the first pages of the album and its subsequent pages begins to differ dramatically. Demonstration of such an album to an ignorant person (or even parent), where the quality of writing on the first and last pages of the album is strikingly different, as a rule, is truly surprising when an interested person learns that both in the beginning and in the end wrote the same student.

Besides, the time of learning to write is noticeably reduced, and the child becomes capable of mastering completely different outlines of letters of different alphabets and is perfectly oriented in the space of the sheet [269].

Second subject situation.

The educational discipline "Basics of design and construction".

3rd grade, second half, fourth quarter.

Topic: "Cube unfolding."

The subject matter. From a sheet of paper to make a reamer of the cube and from the reamer to glue the paper cube.

In the curriculum of the discipline "Basics of Design and Engineering" the theme "Volumetric Body Deployment" follows at the very beginning of Theme 3. Three-dimensional (volumetric) space elements.

As a result of experimental training, which is a practical solution to the problem of converting a flat sheet of paper into a volumetric cube, students gradually find the right solution on their own.

Moreover, this solution is by no means connected with the reconstruction, reproduction of the sample of the scan, but represents an independent creation of this scan as a result of constructive communication.

But the main thing for us is not the ability to make sweeps of the cube of any size, which is also a by-product of such training. The main result is the ability to scan almost any three-dimensional body, even those that the teacher does not imagine [270] [271] [272] [269] [273] [274] [275] [276] [277].

Third subject situation.

Academic discipline "Fundamentals of theoretical natural science.

3rd grade, first half, second quarter.

Theme: *"Discrete structure of the substance."*

The subject matter. Find the source of the scent spreading in the classroom.

In the subject "Fundamentals of Theoretical Science" the topic "Discrete Structure of Matter" is almost at the beginning, immediately after the actual introductory topic "Substances and Objects".

As a result of experiential learning, which, as always, all subjects are based on the solution of practical research problems, students come to the need to create new tools to model reality. When comparing different variants of description of substance distribution in class space, they come to conclusion that natural

for these conditions model of substance as continuous and "stretching" reality in this case "does not work". What was needed was a new model that children had not previously used and did not know.

Such a model is the only possible way to represent a substance as composed of individual particles rather than as a continuous "stretching" material. In conventional training, the discrete model of substance (atomic-molecular structure of substance) is already under the new program is considered no earlier than in the seventh grade.

Once a discrete model of the substance is constructed by the students themselves, it becomes a theoretical means for further investigation of reality. In these studies, both new knowledge and improvement of the discrete model as a theoretical means take place simultaneously.

By using a discrete model of the substance, students are able to investigate effects such as evaporation and condensation of water, and the transition of water from one aggregation state to another. Explain special cases of evaporation without liquid phase (iodine sublimation), etc.

The most important thing that students acquire by creating a discrete model of matter is the ability to predict the processes and results of reality transformation, which is practiced in other sections of this and other academic disciplines.

As a result of experimental training, students in the third grade of any school create a discrete model of a substance consisting of separate "atoms". For this purpose, children use mugs of various colors and diameters representing the "atoms" of the substance and sheets of colored paper representing the space where the substance is depicted.

A discrete model of the substance arises as a result of special experience in spreading odorous substance in the space of the class. It is a specific means by which students can explain the actual processes of smell distribution that are taking place.

The situation of the experience is organized as follows. The teacher brings a jar of fragrant material (e.g. perfume) to the classroom in advance. The jar is specially placed away from the teacher's usual place in the classroom. For example, on one of the back tables. At the beginning of the experience, before the jar is opened, the teacher explains the conditions of the task. "« ... After a while there will be some changes in the classroom which you should detect.

By the nature of the changes in the class you will have to find the source of these changes ... ".

In order to meet this challenge, it is necessary to examine the nature of the changes taking place. To do this, it is necessary to fix these changes on the class plan depicted on a sheet of paper. To do this, each pair of students sitting at the same table divides the main tasks among themselves: one student tries to detect the changes in the classroom, another student tries to detect the changes in the classroom in time and correctly mark the changes on the sheet of paper.

The one of the two pupils, who is responsible for detecting the expected changes, firstly, tries to detect the changes himself and tell the comrade about them immediately, so that he notices them on the class plan in time, and secondly, monitors the changes that other couples in the class detect and also informs the comrade about them. The latter immediately notes the discovered facts in the class plan. The changes made in the class plan represent the first stage of experience.

The second stage of the experience is a discussion of the resulting images of changes in the classroom. To do this, all class plans with the changes are put up on the blackboard so that they are clearly visible to all students. As a rule, all images are original and seemingly different from each other. Then the teacher says that all the images are correct, i.e. they reflect the processes that took place in the class. There is a problem: the correct images are usually completely different from each other. The teacher organizes a constructive discussion which results in a common point of view: all the images will only represent the same process if the spreading smell is not a continuous space, but separate discrete particles of smell (substance). In this case, all images will overlap [278] [279] [269] [280] [276] [281] when superimposed.

Fourth subject situation.

Academic discipline "Fundamentals of theoretical natural science".

3rd grade, second half, third quarter.

Theme: *"Aggregate state of substances".*

The subject matter. Answer the question, what will happen if a substance (e.g. ice, water, steam) is continuously heated (e.g. on alcohol)? Why?

In the "Basics of Science" curriculum, the topic "Aggregate state of

substances" is located before and after the topic "Concentration".

This topic is studied with the help of the discrete substance model, previously designed as a theoretical tool.

The experimental situation of studying the features of the aggregate state of a substance is a change in the phase of water when its temperature changes. The scheme of the demonstration experiment is as follows. The first one. The teacher shows water in solid state and asks the question: "... What happens to the ice if it is placed on alcohol (i.e. if it is constantly heated)? Why? ... ».

Number two. Each pair, using a discrete model of the substance, constructs its response and fixes it in a more reliable form. For example, it sketches the response on a separate piece of paper.

Third. All variants of answers received by pairs are substantiated by the pairs that received them and discussed by the whole class. As a result, a general conclusion is made about the set of possible results that are expected by the students.

Fourth. The teacher shows the real processes that take place when the ice is heated, and the pupils carefully record everything that happens.

Fifth. The class discusses the correctness of fixation of the process and the result of the demonstration experiment so that the fixation of a fact is unambiguous and would not arouse the slightest doubt in anybody in the class.

Six. After an objective fact has been fixed and the way it was fixed has not been questioned by any of the students, each pair correlates its model of the supposed result with the fixed real result (fact) and draws a conclusion.

Seven. The conclusions of all pairs are discussed by the whole class and a general agreed conclusion (consensus) is made about the correctness of the substance model and the correctness of its application in this experimental situation.

Eighth. If necessary, the discrete model of the substance is corrected to be tested in the next experimental situation. So on and so forth. [278] [279] [269] [280] [276] [281].

Fifth subject situation.

Academic discipline "Fundamentals of theoretical natural science.

3rd grade, second half, third quarter.

Theme: "Concentration."

The subject matter. To make one preset quantity and one preset color from two "paints".

In the "Fundamentals of Science" curriculum, the topic "Concentration" is located after the topic "Aggregate state of substances" and before the topic "Mixtures and compounds".

As a result of experiential learning, students in the third grade of any school can learn to obtain any shade of colour from the two source components. For this purpose, children use so-called *"color schemes",* which are sets of squares of this or that color.

Each square represents the proportion ("part") of paint that is added to the mixture. By creating these paint simulation tools, children understand that color is independent of the amount of paint. And they know how to create inks of a given color and any volume.

In order to test the effectiveness of the experiential learning, comparative control studies between students in the third experimental grade and students in the seventh grade of regular schools have been conducted repeatedly. The first such control work was carried out in 1985 in 146 schools in Moscow. Both then and later, the results were approximately the same. Namely, as a result of the decision of identical, fully coincident texts of control works on the subject of "concentration" in both the third and seventh grades, the distribution of marks was approximately the same (approximately the same number of "fives-", "four", "three", etc.).

This result, like all experimental learning outcomes, is independent of the location where the experimental learning was conducted and the location where the control test was conducted. When comparing classical and creative learning technologies such a result will be obtained always, at any time and in any place.

The main subject result of "Concentration" is the ability of students to adequately model (predict) the concentration of any binary compositions and in practice to obtain predicted properties [278] [279] [269] [280] [276] [281].

Sixth subject situation.

Academic discipline "Fundamentals of theoretical natural science.

3rd grade, second half, fourth quarter.

Subject: "Mixtures and compounds."

The subject matter. What kind of substance was the result of the chemical reaction? Why?

In the developed fragment of the educational discipline "Fundamentals of science" the theme "Mixtures and compounds" is final. In it the ability to reconstruct one's own ways of cognition (i.e. to develop) in problem situations, which was formed at previous stages, is most prominent.

As a result of experimental learning, students become accustomed to the idea that the basic logic of education is the logic of reconstructing their models and schemes as theoretical means of cognitive activity. Here, more than ever, the necessity of students' independent constructive activity of abandoning habitual models and building new, unexpected and sometimes seemingly impossible, is clearly manifested.

The practical problem, in this case, arises as a contradiction between *mixtures* and *compounds of* substances, at first glance in appearance little different from each other. But the difference in the properties that are studied by students leads them to the idea that these externally similar substances, consisting of the same components, are actually *different* substances.

Moreover, the result is that they can only be described by different types of models. If in case of *mixture of* initial substances the model of mixture is a *set of separate "molecules" of* initial substances mixed with each other, then in case of *chemical compound* such type of model cannot serve as explanatory model of happened phenomenon (burning of iron and sulfur mixture and its transformation into powder).

As a result of research and reflection, students come to a new type of models, models in which *a new "molecule"* consists of *"old" molecules of* source substances. For students, this conclusion is a real and very fundamental discovery that they themselves made in the process of finding a solution to a practical problem.

As a result, they begin to develop in themselves the ability to construct new models as new theoretical means of their own cognitive activity [278] [279]

[269] [280] [276] [281].

Seventh subject situation.

The educational discipline "Basics of design and construction".

2nd grade, first semester, second quarter.

Theme: "Straight lines."

The subject matter. Create a set of subjects ordered in a given quantitative respect, having the form of straight-line segments.

In the "Basics of Design and Engineering" curriculum, the "Linear Space" theme (straight lines) is placed in front of the "Flat Space" and "Volumetric Space" themes and takes first place.

The purpose of mastering this theme is to prepare the transition to the theme of "Corners" and, subsequently, the transition to the theme of "Flat figures" (flat forms). The topic "linear space", despite its preparatory character, takes a large amount of teaching time because the success of organizing the transition between linear and flat space directly depends on the success of organizing the development of linear space.

The seemingly obvious simplicity of solving this type of problems is erroneous, because the problems for ordering the linear (rectilinear) space imply the necessity of theoretical means, which are, first of all, a perceptual concept of a way to increase/decrease the number of the main property (length) of a rectilinear segment.

Finding a common way of solving problems on ordering the linear space begins with the formulation by students of the definition of the perceptual concept of "straight line" and "straight line segment" (straight line segment). Here already at the first stages the specificity of creative education is shown, which consists in the construction of a system of values by the students themselves. The necessity constantly created by the teacher to formulate and fix all his actions, goals and results, ways and processes of decision in the word creates conditions for the emergence of reflection as a relationship of goals and results, ways and processes of activity.

Once the definition of "straight line" and "straight line segment" has been formulated, students formulate definitions for a general method of comparing straight line segments. The generality of notions and methods is initially guaranteed by the need to formulate them in a word (fixation in a sign), the

meaning of which is the notion (the general method of action).

After the preliminary preparation of the concept apparatus by the students themselves, they move on to solving practical problems. At the same time, one of the most important conditions is always observed when solving practical problems: every student, no matter what kind of cooperation, communication or joint activity he or she is in, always performs an integral independent activity. The integrity of the performed individual independent activity is ensured by the student's necessity to independently formulate the goals (tasks) of the activity, independently create (select) the ways and means of its realization, independently practically receive the result of the individual activity, independently formulate (accept) the criteria for evaluating the process and the result of the activity in relation to its method and goal. In other words, the integrity of the individual activity is ensured by the necessity to individually perform all components of the activity independently.

The criterion of division (distribution) of functions among students is not the components of the activity, individually performed and coordinated in the process of performance, but specific aspects of the given quantitative relation (more or less; increase or decrease, etc.) of the whole general activity. Thus, in solving any theoretical or practical problem in the conditions of creative education, each student always carries out the complete structures of integral activity, set by the goal-result ratio. Partial activity, however, is not connected with partial activity (with a part of performed actions), but with partial implementation of the given quantitative relation.

Therefore, the division of students' functions in the general activity and the necessity of the general activity itself is determined not by the structure of the performed activity, but by the structure of the given quantitative relation of ordering. And as the structure of the quantitative ordering relation always consists of two opposite components, as long as any general activity of this type always consists of two aspects. Namely, from aspect of increase, and from aspect of reduction. But in any case of individual performance of any of two aspects of the general activity, individual activity is always performed as integral activity.

As a result of mastering the reality of linear space, students become capable of ordering linear space in any quantitative respect. This makes it possible to begin the transition to flat space by solving transitional tasks, for example: "« ... Using straight lines, draw a circle (square, rectangle and any flat figure) ... "» [270] [271] [272] [269] [273] [274] [275] [276] [277].

Eighth subject situation.

The educational discipline "Basics of design and construction.

2nd grade, first semester, second quarter.

Theme: "Flat corners."

The subject matter. Create an ordered, quantified set of flat-angle subjects.

In the "Basics of Design and Engineering" curriculum the topic "Corners" is located between "Linear Space" and "Flat Space" and takes an intermediate, transitional place.

The psychological task, which is solved within the framework of mastering this subject matter, is to complete the formation of an intuitive form of consciousness. Thus, the subject theme "Corners" corresponds to the psychological theme "Formation of consciousness of intuitive type".

In the course of the pilot study, we have repeatedly carried out comparative assessments of the learning outcomes of experimental study groups and ordinary secondary school classes. We have made these comparisons in different regions. And everywhere, we found the same effect.

Namely, try to offer any elementary class trained in any secondary school to solve the following problem: "Draw a series of doubling corners". As a result, you will see the following. You will be offered as an answer to your task a sequence of right angles, in which the lengths of sides are doubled.

If you offer to solve the same problem to the students who have been experimentally trained, you will see the following result. The answer to your problem will be a sequence of angles, with an increasing solution (i.e. actually doubling the angles). At the same time, it is not a problem for children that the angles are both sharp and dull, and so on.

This shows that in the context of creative education ***all*** children without exception (and this is also one of the most important subject results) learn the concept of "angle" as theoretical. That is, as a general principle of constructing any particular angle in any given situation.

This result is not limited to specific schools where we were able to make a practical comparison. No matter how many tests are conducted, we would get the same result everywhere. To draw this conclusion, you do not have to travel to many educational institutions. The basis for this is a comparative analysis

of classical and creative learning technologies [270] [271] [272] [269] [273] [274] [275] [276] [277].

5.4.3 Methodological structures of experimental situations

The methodological system of organization of the experimental situation of self-development as a transition from sensory-mediated type of the subject activity to its perceptually mediated type is a series of private methods [282][283][284][285] [286] connected by the internal logic of complication of psychological problems.

A system of private methods to ensure the organization of self-development

Private method 1.

Task 1: **Awareness of your own activity problem**. Methodology of organizing the solution.

1.   Every student in the class tries to solve a new problem the old way.

2.   As a result of practical attempts to apply the old way of doing things, in a teacher-organised discussion, pupils come to the conclusion that the old way of doing things is "not working".

Private method 2.

Task 2: Realize the **need to change the old way of doing things to the new way**.

Methodology of solution organization.

1.   As a result of the discussion, all students come to the conclusion that instead of the old way of doing things, a new way of doing things must be invented.

Private method 3.

Assignment 3: **formulate a definition of the new form of subjects.**

Methodology of solution organization.

1. Each student tries to formulate a definition of a new subject form. For this purpose, students come up with the meanings of words they need.

2.   As a result of the discussion, the class formulates the definition of a new subject form by inventing and adopting the meaning of the necessary words by the whole class (and each of the classes).

3.   The definition of a "perceptual concept" in the new subject form is recorded in the "textbook" as the students' invented meaning of words.

Private method 4.

Assignment 4: **formulate a definition of a new form of executive formative action.**

Methodology of solution organization.

1. Each student tries to answer the question of how to change the size of the new subject form; how can this be imagined?

2. As a result of the analysis of subjects having a new subject form and correlation of the image of perception of the subject form with the history of development of ways of activity, the class finds a solution.

3.   As a result of the discussion, the class formulates a new way of subject action.

Private method 5.

Assignment 5: **formulate criteria for comparing subjects that have a new form.**

Methodology of solution organization.

1. As a result of the discussion, the class develops and formulates rules for evaluating the results of comparing two subjects that have a new form.

Private method 6.

Assignment 6: **formulate a way of comparing items that have a new form.**

Methodology of solution organization.

1.   The teacher suggests solving the problems and using criteria to determine which subjects are larger and which are smaller. As a result of discussion and discussion of different versions of problem solving, a general way of solving problems is formulated for comparing subjects with new forms.

Private method 7.

Assignment 7: **formulate a way to change the size of the new subject form.**

Methodology of solution organization.

1. As a result of the discussion, the class develops and formulates the rules: how to change the value (increase/decrease) of the subject form.

Private method 8

Task 8: **Formulate ways to monitor and evaluate performance.**

Methodology of solution organization.

1. As a result of the discussion, the class develops and formulates the rules how we will compare goals (intermediate goals) and final (intermediate) results of the forming activity.

Private method 9.

Task 9: **Formulate criteria for monitoring and evaluating performance.**

Methodology of solution organization.

1. As a result of the discussion, the class develops and formulates the rules of control and evaluation: what we will consider as a result, what we will compare and how we will make the final decision.

Private method 10.

Task 10: **jointly create means and methods of solving; jointly distribute individual tasks; individually practice solving tasks; mutually check individual solutions.**

Methodology of solution organization.

10.1.　　The teacher formulates a practical goal.

10.2.　　The teacher analyses the goal and formulates two objectives.

10.3.　　**The class formulates criteria for mutual verification of the correctness of a learning objective and criteria for evaluating performance.**

10.4.　　**Pupils in pairs choose (select, create) the means and ways of solving both problems.**

10.5.   **Pupils in pairs distribute tasks among themselves.**

10.6.   **Each learner solves his or her own practical task.**

10.7.   **On the basis of 10.3, students in a pair of mutual verification of each other's solutions to problems (results, means and methods).**

10.8.   On the basis of 10.3, the teacher assesses the correctness of individual decisions.

10.9.   On the basis of 10.3, the teacher assesses the correctness of the individual mutual checks.

10.10.   On the basis of 10.3, the teacher places a mark in the journal for the correctness of individual decisions.

10.11.   On the basis of 10.3, the teacher marks the correctness of the individual interdepartmental checks in the logbook.

Private Method 11.

Assignment 11: **jointly create a common solution.**

Methodology of solution organization.

11.1.   The teacher formulates a practical goal.

11.2.   The teacher analyses the goal and formulates two objectives.

11.3.   **The class formulates criteria for mutual verification of the correctness of the purpose and criteria for evaluating joint activities.**

11.4.   **Students together choose (select, create) the means and ways of practical solutions to problems.**

11.5.   **Pupils share tasks with each other.**

11.6.   **Each learner solves his or her own practical task.**

11.7.   **On the basis of 11.3, students in a pair independently verify with each other the correctness of the tasks (results, means and ways).**

11.8.   *Out of two separate independent individual solutions, the pair creates a common solution for a practical purpose.*

11.9.   On the basis of 11.3, the teacher assesses the correctness of individual decisions.

11.10. On the basis of 11.3, the teacher evaluates the correctness of the pair decision.

11.11. On the basis of 11.3, the teacher assesses the correctness of the individual mutual checks.

11.12. On the basis of 11.3, the teacher places a mark in the journal for the correctness of individual decisions.

11.13. On the basis of 11.3, the teacher marks the correctness of the pair decision in the journal.

11.14. On the basis of 11.3, the teacher marks the correctness of the individual interdepartmental checks in the logbook.

Private method 12.

Assignment 12: **Mutually assess individual actions.**

Methods of solution organization

12.1. The teacher formulates a practical goal.

12.2. The teacher analyses the goal and formulates two objectives.

12.3. **The class formulates criteria for evaluating the correctness of the purpose and criteria for evaluating joint activities.**

12.4. **Pupils in pairs independently choose (select, create) the means and ways of practical problem solving.**

12.5. **Pupils in pairs distribute tasks on their own.**

12.6. **Each learner solves his or her own practical task,**

12.7. *On the basis of 12.3, students in pairs evaluate each other's correctness in solving problems (results, means and ways).*

12.8. **A pair of two separate independent individual solutions synthesizes a common goal solution.**

12.9. On the basis of 12.3, the teacher assesses the correctness of the overall decision.

12.10. On the basis of 12.3, the teacher marks the students in the logbook, which they put to each other for mutual verification.

12.11.   On the basis of 12.3, the teacher marks the correctness of the pair decision in the logbook.

12.12.   On the basis of 12.3, the teacher marks the correctness of the mutual individual assessment in the journal.

Private method 13.

Task 13: **jointly assess the joint solution; jointly create a solution benchmark; jointly assess individual courses of action; jointly assess the mutual evaluation of individual solutions.**

Methodology of solution organization.

13.1.   The teacher formulates a practical goal.

13.2.   The teacher analyses the goal and formulates two objectives.

13.3.   **The class formulates criteria for evaluating the correctness of the decisions of the purpose and criteria for evaluating joint activities.**

13.4.   **Pupils in pairs independently create (select) the means and ways of practical problem solving.**

13.5.   **Pupils in pairs distribute tasks on their own.**

13.6.   **Each learner solves his own problem.**

13.7.   **On the basis of 13.3, students in pairs mutually assess the correctness of the tasks (results, means and ways).**

13.8.   **In a pair of two separate individual and independent solutions, students synthesize a common goal solution for the pair.**

13.9.   *On the basis of 13.3, the class chooses (creates) the target solution standard.*

13.10.   *On the basis of 13.3. and 13.9., students in pairs mutually evaluate individual solutions.*

13.11.   *On the basis of 13.3. and 13.9. the pair evaluates the correctness of their own general decision.*

13.12.   *On the basis of 13.3. and 13.9. the pair evaluates the correctness of the mutual evaluation of individual decisions.*

13.13.   On the basis of 13.3 and 13.9, the teacher shall place in the journal

the marks of the pupils that they have given to each other for mutual evaluation.

13.14.   On the basis of 13.3. and 13.9, the teacher shall mark the correctness of the overall decision.

13.15.   On the basis of 13.3 and 13.9, the teacher puts a mark in the logbook for the correctness of the paired decision, which the pair has set itself.

Private Method 14.

Task 14: **Mutually assess each other using the benchmark.**

Methodology of solution organization.

14.1.   The teacher formulates a practical goal for the class.

14.2.   The teacher analyses the goal and formulates two objectives.

14.3.   **The class formulates criteria for evaluating the correctness of the purpose, the self-evaluation of the activity.**

14.4.   **Pupils in pairs independently choose (select, create) the means and ways of solving problems.**

14.5.   **Pupils in pairs distribute tasks on their own.**

14.6.   **Every pupil in a pair solves his own problem.**

14.7.   **On the basis of 14.3, students in pairs assess each other's correctness in solving problems (results, means and ways).**

14.8.   **A pair of two separate independent individual solutions creates a common goal solution for the pair.**

14.9.   **On the basis of 14.3, the class chooses (develops, creates) the target solution standard.**

14.10.   *On the basis of 14.3 and 14.9, students assess themselves in pairs.*

14.11.   **On the basis of 14.3 and 14.9, the pair estimates themselves.**

14.12.   On the basis of 14.3 and 14.9, the teacher evaluates the mutual evaluation of students in pairs.

14.13.   On the basis of 14.3 and 14.9, the teacher assesses the self-esteem of the pair.

14.14.   On the basis of 14.3 and 14.9, the teacher will put a mark in the

logbook for the mutual check that the pupils have made; for the self-assessment of the couple; for the quality of individual work; for the quality of the overall decision.

Private method 15.

Assignment 15: **jointly assess the objective; coordinate the processes for solving individual tasks; individually assess one's own assessment of another; jointly assess joint self-evaluation.**

Methodology of solution organization.

15.1.   The teacher formulates a practical goal for the class.

15.2.   *Pupils together analyze the goal and formulate the objectives.*

15.3.   **The class develops and formulates criteria for evaluating decisions of the practical purpose, self-evaluation of the activity.**

15.4.   **Pupils in pairs independently choose (select, create) the means and ways of solving problems.**

15.5.   **Pupils in pairs distribute tasks on their own.**

15.6.   *Coordination in the process of implementing individual solutions distributed among themselves in a pair of practical tasks.*

15.7.   **A pair of two separate independent individual solutions creates a common goal solution for the pair.**

15.8.   **On the basis of 15.3, the class independently chooses (develops, creates) a standard for solving a practical goal.**

15.9.   **On the basis of 15.3 and 15.8, students assess themselves in pairs.**

15.10.   **On the basis of 15.3 and 15.8, the couple assesses themselves.**

15.11.   *On the basis of 15.3 and 15.8, each student assesses his/her mutual evaluation.*

15.12.   *On the basis of 15.3 and 15.8, the pair assesses its own self-assessment.*

15.13.   On the basis of 15.3 and 15.8, the teacher marks in the logbook for the mutual assessment made by the students; for the self-assessment of the couple made by the couple; for the quality of individual work; for the quality

of the overall work; for the self-assessment of the couple; for the self-assessment of the couple.

Private Method 16.

Task 16: Formulate **a practical goal together; create means and ways of solving the goal individually.**

Methodology of solution organization.

16.1.   *The class formulates the practical purpose of the joint activity.*

16.2.   **Pupils in pairs independently analyze the goal and formulate the objectives.**

16.3.   **The class independently develops and formulates the criteria for the development of the goal reference and the criteria for evaluating joint activities.**

16.4.   **Students in pairs distribute tasks among themselves.**

16.5.   *Each learner chooses (selects, creates) the means and ways of solving his own problem.*

16.6.   **Coordinated individual decisions of the tasks distributed among themselves in pair.**

16.7.   **A pair of two separate independent individual solutions creates a common goal solution for the pair.**

16.8.   **On the basis of 16.3, the class independently creates (selects) a standard for solving a practical problem.**

16.9.   **On the basis of 16.3 and 16.8, students assess themselves in pairs.**

16.10.   **On the basis of 16.3 and 16.8, the pair estimates themselves.**

16.11.   **On the basis of 16.3 and 16.8, each student assesses his/her mutual evaluation.**

16.12.   **On the basis of 16.3 and 16.8, the pair assesses its own self-esteem.**

16.13.   On the basis of 16.3 and 16.8, the teacher marks in the logbook for the mutual assessment made by the couple; for the self-esteem of the couple; for the quality of individual work; for the quality of the overall work; for the

self-esteem of the couple; for the self-esteem of the couple.

Private Method 17.

Task 17: **Individually evaluate their activities in pairs; individually evaluate their joint activities; individually evaluate their self-esteem.**

Methodology of solution organization.

17.1.   **The class formulates the practical purpose of the joint activity.**

17.2.   **Students in pairs analyze the goal and formulate the objectives.**

17.3.   **The class develops and formulates criteria for developing a benchmark for the practical purpose and criteria for evaluating joint activities.**

17.4.   **Pupils in pairs distribute tasks among themselves.**

17.5.   **Each pair independently creates (selects) the means and ways of practical solution of his problem.**

17.6.   **Coordinated individual decisions of the tasks distributed among themselves in pair.**

17.7.   **A pair of two separate independent individual solutions creates a common goal solution for the pair.**

17.8.   **On the basis of 17.3, the class creates (selects) the target solution standard.**

17.9.   *On the basis of 17.3 and 17.8, each student evaluates his or her individual activity as a couple.*

17.10.   *On the basis of 17.3 and 17.8, each student evaluates the outcome and performance of his/her pair independently.*

17.11.   *On the basis of 17.3 and 17.8, each student assesses his or her own self-assessment.*

17.12.   *On the basis of 17.3 and 17.8, each student evaluates their own assessment of the outcome and performance of the pair.*

17.13.   On the basis of 17.3 and 17.8, the teacher marks the self-assessment made by each student; the individual assessment of the pair; the quality of the individual work; the quality of the overall work; the individual self-

assessment; the individual assessment of the pair.

Private method 18.

Task 18: **Individually create means and ways of solving a practical goal**.

Methodology of solution organization.

18.1.   **The class formulates the practical purpose of the joint activity.**

18.2.   **Pupils together analyze the goal and formulate the objectives.**

18.3.   **The class develops and formulates criteria for the choice (creation) of the task solution benchmark and criteria for evaluation and self-evaluation of joint activities.**

18.4.   *Each student independently creates (selects) the means and ways of solving both tasks (practical purpose).*

18.5.   *Each learner solves the goal (both tasks) on his own.*

18.6.   **On the basis of 18.3, the class develops a benchmark for the result of the target solution.**

18.7.   **On the basis of 18.3 and 18.8, each student evaluates his/her individual activity as a pair.**

18.8.   **On the basis of 18.3 and 18.8, each student evaluates the outcome and performance of his/her pair independently.**

18.9.   **On the basis of 18.3 and 18.8, each student assesses his or her own self-assessment.**

18.10.   **On the basis of 18.3 and 18.8, each student evaluates his or her own assessment of the outcome and performance of the pair.**

18.11.   On the basis of 18.3 and 18.8, the teacher marks the self-esteem of each student, the individual assessment of the pair, the quality of individual work, the quality of the overall work and the individual self-esteem.

Private method 19.

Assignment 19: **individually create a benchmark for the result of the solution.**

Methodology of solution organization.

19.1.   **The class formulates the practical purpose of the joint activity.**

19.2.   **Pupils in pairs independently analyze the goal and formulate the objectives.**

19.3.   **The class develops and formulates criteria for selecting (creating) a benchmark for the practical purpose and criteria for evaluation and self-evaluation of joint activities.**

19.4.   **Each pair independently creates (selects) the means and ways of solving both subtasks (practical purpose).**

19.5.   **Everyone in a pair practically solves the goal (both tasks) on their own.**

19.6.   *Each student independently chooses (develops, creates) a standard for the solution of a practical goal, based on 19.3.*

19.7.   **On the basis of 19.3 and 19.6, each student evaluates his or her own individual activities.**

19.8.   **On the basis of 19.3 and 19.6, each student evaluates the results and activities of other students independently.**

19.9.   **On the basis of 19.3 and 19.6, each student assesses his or her own self-assessment.**

19.10.   **On the basis of 19.3 and 19.6, each student evaluates his or her own assessment of the results and activities of other students.**

19.11.   On the basis of 19.3 and 19.6, the teacher marks the self-assessment made by each student; the assessment of other students; the quality of individual work; the assessment of individual self-assessment.

Private method 20.

Assignment 20: **Individually analyze the goal and formulate the objectives**.

Methodology of solution organization.

20.1.   **The class formulates the practical purpose of the joint activity.**

20.2.   *Each learner analyzes the goal and formulates the tasks himself/herself.*

20.3.   **The class develops and formulates criteria for selecting (creating)**

a benchmark for the purpose, evaluation and self-evaluation of joint activities.

20.4.   **Each learner independently creates (selects) the means and ways of practical solution of both tasks (goals).**

20.5.   **Each learner practically solves both tasks (goal) on his own.**

20.6.   **Each learner independently creates (selects) a benchmark for the practical solution of the goal based on 20.3.**

20.7.   **On the basis of 20.3 and 20.6, each student evaluates his or her own individual activities.**

20.8.   **On the basis of 20.3 and 20.6, each student evaluates the results and activities of other students independently.**

20.9.   **On the basis of 20.3 and 20.6, each student assesses his or her own self-assessment.**

20.10.   **On the basis of 20.3 and 20.6, each student evaluates his or her own assessment of the results and activities of other students.**

20.11.   On the basis of 20.3 and 20.6, the teacher marks the self-assessment made by each student; the assessment of other students; the quality of individual work; the assessment of individual self-assessment.

Private Method 21.

Task 21. to **individually formulate the goal of the activity**.

Methodology of solution organization.

21.1.   **Each learner independently formulates the goal of the educational and nascent activity.**

21.2.   **Each learner analyses a practical goal and formulates a task for himself/herself.**

21.3.   **Each learner independently develops and formulates criteria for creating (collecting) a benchmark for the practical purpose, evaluation and self-evaluation of the activity.**

21.4.   **Each learner chooses (selects, creates) the means and ways to solve both subtasks (goals) in practice.**

21.5.   **Each learner practically solves both tasks (a practical goal).**

21.6.   **Each learner independently creates (selects) a benchmark for practical purpose and performance evaluation.**

21.7.   **On the basis of 21.3 and 21.6, each student evaluates his or her own individual activities.**

21.8.   **On the basis of 21.3 and 21.6, each student evaluates the results and activities of other students independently.**

21.9.   **On the basis of 21.3 and 21.6, each student assesses his/her own self-assessment.**

21.10.   **On the basis of 21.3 and 21.6, each student evaluates his or her own assessment of the results and activities of other students.**

21.11.   On the basis of 21.3 and 21.6, the teacher marks the self-assessment made by each student; the assessment of other students; the quality of individual work; the assessment of individual self-assessment.

5.5 Main results of experimental research

5.5.1 Empirical results

The purpose of experimental studies was to confirm in practice the fact of change in the nature of ontogenetic development when the mechanism of origin of determinants of subject activity changes. The main empirical result of the experimental research is the fact of practical realization of the psychological transition between sensory-mediated structure of the subject activity and perceptual-mediated structure of the subject activity as a result of the technology of constructing new epochs. This fact of change in the nature of mental development has been repeatedly confirmed in many research situations.

First, in a situation of the organization of self-development in conditions of the basic educational discipline "Basics of designing and designing". The presence/absence of the fact of self-development was assessed on the basis of the indicator of presence/absence of change in the ability to solve mathematical (geometrical) problems with new psychological complexity.

Secondly, in the situation of organizing self-development in the conditions of the auxiliary educational discipline "Fundamentals of theoretical natural science". The presence/absence of the fact of self-development was assessed

on the basis of the indicator of presence/absence of change in the ability to solve physical problems on the propagation of gas molecules in the air with a new psychological complexity.

Third, in a situation where self-development is organized in the context of the "Concentration" auxiliary educational discipline. The presence/absence of the fact of self-development was assessed on the basis of the indicator of presence/absence of change in the ability to solve chemical tasks for the preparation of binary solutions with predetermined properties having a new psychological complexity.

In all three situations, the psychological basis of the educational process was the technology of self-development organization, developed and implemented on the basis of the internal logic of the structure development of jelly-subject constructive activity, and subject situations were significantly different from each other concrete and subject content (mathematics, physics, chemistry). But the internal logic of qualitative change (complication) of subject problems in all three cases was the same and corresponded to the logic of constructive activity, the logic of change in the level of mediation of subject activity. In general, it was shown that the academic achievements of experimental classes were qualitatively different from those of control classes. The results of such studies are given in [287, p.1112] [288].

To the main psychological results, first of all, we attribute the positive dynamics of learning motivation provided by the technology of constructing new opportunities. The following were the indicators of learning motivation: desire to go to class, desire to speak at the blackboard, desire to take part in discussions, attitude to the subject, activity in discussions, etc. The methods of observation, conversation, questionnaires, etc. were used to study the dynamics of learning motivation. In addition, the positive dynamics of learning motivation served as a criterion for evaluating the practical work of teachers-experimentalists, the effectiveness of the system of training and retraining of teachers-experimentalists and the effectiveness of the methodological service. In contrast to the control group, which was used by all students studying under the conditions of classical attribution technologies, students of experimental groups always showed positive dynamics of educational motivation, regardless of age, academic discipline, type of school, location, etc.

We also attribute positive dynamics of independence of constructive activity *to the main psychological results*. Among the indicators of self-sufficiency the following were used: the ability to have a point of view and to defend it, the

desire to substantiate one's point of view, the ability to control and evaluate oneself, the ability to create means and ways of solving problems, the ability to formulate new goals and tasks, the ability to formulate criteria of control and evaluation of activity, the ability to create (select) standards of problem-solving, etc., were used. The ability to communicate constructively also belongs to the basic psychological indicators. The ability to take into account another point of view, the ability to change one's point of view if the other proves it is necessary, the ability to formulate jointly the criteria of control and evaluation, the ability to formulate goals and tasks, the ability to create means and methods together, the ability to synthesize the common result, the ability to help and help each other, the ability to listen to the other without interrupting, the ability to respect another point of view, etc. were used as indicators of the ability to communicate.

The main subject results include the systemic (integrity) of the knowledge, skills and abilities mastered and their "theoretical" (universal) nature. The subject results of the experimental research convincingly show that the application of technology of constructing new opportunities in the educational process qualitatively changes the knowledge result of education and significantly reduces the time of learning, in comparison with educational technologies based on appropriation.

As diagnostic situations, problematic situations were used, which implied the need to obtain paradoxical results of the subject action (i.e. results that at first glance contradict the concept being mastered). Such results were obtained by applying the method in unusual conditions. For example, if we set the initial (sharp) angle of an arbitrary value (for example, 45 degrees) and suggest drawing a series of five angles doubling in size. In this case, the second corner will be a straight line, the third one will be a turned (straight line), the fourth and all the subsequent ones will be circles (n x 3600).

Successful solution of this problem is possible only if the ability to "behind the phenomenon" see the way of its origin, however paradoxical this phenomenon may look. This means that a universal (rather than private) ability to construct an ideal form of subject activity and to carry it out in practice, correlating its ideal and real forms, has been cultivated.

If an ability (the underlying activity of the reflexive consciousness) is formed as a private ability (and the activity, respectively, has been transformed into a skill or skill), then the activity is not a universal attitude capable of reproducing any specific form of a given class, but a specific attitude capable of reproducing

a specific ideal form rigidly connected with a specific real form. Changing the conditions of a task involving the construction of a new concrete relationship of ideal and real form causes insurmountable difficulties, since such a student is only capable of actualizing the imprinted "rigid" relationships, but is not capable of constructing, building, and rebuilding relationships on his own.

The same results are obtained by transferring the learned mode of action (the ideal form of action) to a new subject. For example, if an intuitive operation of ordering is mastered on linear mathematical objects, and the diagnosis of the formation of intuitive operation to make, for example, on chemical objects (eg, binary mixtures of two liquids).

As additional indicators of the empirical efficiency of the experimental technology for constructing new opportunities (ensuring a change in the level of self-development due to a change in the level of mediation of objective activity) the following were used: the dynamics of educational motivation; attitude to the educational process; attitude to oneself; attitude towards teammates (class); attitude to the teacher; own point of view; ability to express one's own point of view; ability to listen to a comrade; the ability to give up one's point of view and accept a reasoned other point of view; ability to work in a group; the ability to independently construct the means and methods of their own activities; ability to control oneself; the ability to independently construct standards of methods and results of their own actions; ability to evaluate oneself; the ability to independently formulate a learning task; the ability to independently formulate criteria for the effectiveness of constructive activity.

As additional diagnostic methods, the following were used: observation; conversation; survey; crosssection method, analysis of activity products, etc. [289] [290].

As an example of *one of the holistic systems of experimental research,* we cite the most recent study, which was conducted in the winter-spring of 2010.

The research problem. The contradiction between "external" nature is a determinant of the socially organized process of individual development and "internal" nature is a determinant of self-development.

Object of study. The educational environment as a space for organizing students' self-development.

Subject of study. Mechanisms and conditions for students to produce ideal

forms of activity as means of self-development.

The basic hypothesis. If the mechanism of assigning ideal forms is changed to the mechanism of producing ideal forms, the externally conditioned development changes to self-development, and the main indicator of learning efficiency is the change of students' learning motivation from negative to positive.

A private hypothesis. If you train a teacher as an experimenter based on the technology of constructing new possibilities, the motivation of the teacher changes from negative to positive.

The purpose of the study. To change the motivation of teachers and students from negative to positive.

Research tasks:

1) Practically train an experimentation teacher to organize the educational process based on the technology of designing new opportunities.

2) Practically implement the educational process based on the technology of constructing new opportunities to change the learning motivation of students.

The uniqueness of this research is that it was planned and implemented as a holistic study of "experiment in experiment", which includes (as components) the organization of teacher-experimental training and organization of a series of experimental lessons by the teacher-experimentalist.

The special interest to this research is explained by the fact that here, for the first time in experimental practice, the system of teaching of a teacher who mastered technological abilities directly in the process of experimental learning, without having preliminary pedagogical education and necessary pedagogical practice, was implemented "in a pure form". The result of the experiment in teacher training was a change in motivation to work as a teacher at school from a pronounced negative to a sustained conscious positive.

A fourth year student of Kainar University, Daria K., acted as a test subject for the experimental training system, and second year students of Gymnasium No. 18 (experimental group) acted as test subjects for the experimental training system. Pupils of the second form of five different schools in Almaty acted as a control group.

The essence of the teacher-experimentalist training system is to organize reflexion of the purpose, result, and method and process of implementation.

The principle of experimentation teacher training is to continuously correlate the objectives of the pilot lessons, the scenarios of the pilot lessons and the results of the practical implementation of the pilot lessons. To this end, an experimental lesson scenario was developed by the teacher-experimentalist in collaboration with the supervisor, based on the principles of the technology of constructing new possibilities and the logic of complicating the learning objectives of the pilot course "Fundamentals of Science".

Video recordings of all the experimental lessons were used as auxiliary material to analyze the real picture in the experimental lessons. On the basis of regular discussions of the goals and principles of creative education, specific scenarios developed on the basis of them, and video recordings of the real course of lessons, an experimental teacher-experimental training system was constructed.

The change in learning motivation from negative to positive was used as an indicator of the success of experimental research in relation to students [291] [292] [293].

Description of the test subjects sample.

The study was attended by 153 second grade students from six schools in Almaty and Almaty region.

SU "Gymnasium" №18, director Beisembayeva Zauresh Tur-sunbekovna. 2 "B" class, class teacher Tyurina Elena, 24 pupils.

LG № 35, Director Prokopyeva Olga Alexandrovna. 2 "A" class, class teacher Temnikova Irina Sergeevna, 37 pupils. M.M.Zhampeisova's *modular technology is* used in the gymnasium.

LG 132, Director Duanabaeva Bibi Chaimkulovna. 2 "B" class, class teacher Zaiko Tatyana Mikhailovna, 27 pupils. 2 "A" class, class teacher Marina Usacheva, 26 pupils. In the linguistic gymnasium, a *game-based learning technology* and the *collective learning method* (CSR) are used.

GUOSH № 117, director Adilbekova Botagoz Zhalilovna. 2 "D" class, class teacher Medvedeva Elena Vladimirovna, 20 pupils. The school uses Y. Konarzhevsky's pedagogical *management as a pedagogical* technology.

School № 11, Kirov, Director Abdullaeva Balya Zhakenov. 2 "B" class, class teacher of Motornova Irina Viktorovna, 23 pupils. This school uses a traditional teaching system.

Experimental study was conducted in the State Institution "Gymnasium" № 18 in 2 "B" class. There were 23 lessons and 1 meeting with parents of pupils of a class. Lessons were conducted 2 times a week (Tuesday, Thursday) for 45 minutes. The first lesson was held on 16 February 2010. The last lesson was held on 20 May 2010.

Experimental method of designing new possibilities.

Represents system of private methods of the organization of self-development in conditions of system of tasks of educational discipline "Fundamentals of natural science".

Diagnostic methodology for studying the attitude towards the teaching of secondary school students

With the help of this method the attitude to the teaching and to the academic subjects is studied [290, p.106]. The method, developed by G.N.Kazantseva, is intended for qualitative analysis of reasons of preference of this or that subject and motives of teaching. The teaching motive is understood to be the reason (internal or external) that motivates a person to study. The method consists of three parts. Primary data are obtained in the form of forms of answers to questions formulated by the psychologist. Processing of primary data is an analysis of students' answers. According to the pupil's answers, the conclusion is made about his or her hierarchy of teaching motives and his or her preference for certain academic subjects.

Diagnostic questionnaire for parents.

A questionnaire was developed consisting of eight questions, the content of which was carefully analysed in accordance with the objectives of the pilot study. The results of the questionnaire provided information on the presence or absence of changes in each child according to the observations of the parents themselves. Questions concerning the child's substantive and psychological development were included in the questionnaire structure.

The method of on and off surveillance.

It was used to compare changes in behavioral activity from lesson to lesson in the whole class, mini-groups and individual students. Observers were experimenting teachers who directly conducted the lessons; assistant experimenting teachers who specifically attended the lessons to observe and share experiences; teaching staff who assessed the effectiveness of the lessons and their relevance to pre-designed scenarios; and cameramen who videotaped

almost all of the experimental lessons, which were regularly reviewed and analyzed by teachers and teaching staff.

The method of mathematical processing of initial data.

To solve the problems in which the comparison of two rows of numbers is carried out, in our case, the most effective is to use a paired Wilcoxon T-criterion. This criterion is powerful and is used to estimate differences in experimental data obtained in two different conditions on the same sample of subjects. In our case, it is data obtained before and after a series of experimental lessons in the same class. This criterion allows to reveal not only the direction of changes, but also their severity. That is, it allows us to determine how much the shift of indicators in one direction is more intense than in another.

Analysis and interpretation of research results.

Methodology "Study of attitude to teaching and to academic subjects".

Table 1. Summary table of source data of the **experimental class** (2 "B" class, State Institution "Gymnasium № 18").

Table 2. Summary table of source data of the **control class** (2 "A" class, Linguistic Grammar School No. 132).

Table 3: Summary table of results of the **control class** (2 "B" class, Linguistic Grammar School No. 132).

Table 4. Summary table of source data of the **control class** (2 "A" class, Linguistic Grammar School No. 35).

Table 5. Summary table of source data of **control class** (2 "D" class, GUOSH № 117).

Table 6: Summary table of source data of the **control class** (2 "B" class, school 11 named after Kirov).

<table>
Table 1.

№	O	After .	Shift	Module		Symbol
1	3	1	-2	2	12,5	
2	7	6	-1	1	6	
3	8	7	-1	1	6	
4	6	4	-2	2	12,5	
5	8	1	-7	7	26,5	
6	7	0	-7	7	26,5	
7	8	6	-2	2	12,5	
8	5	3	+2	2	12,5	*
9	5	0	-5	5	22,5	
10	5	2	-3	3	18	
11	2	3	+1	1	6	*
12	7	1	-6	6	24	
13	5	5	0	0	2	
14	7	0	-7	7	26,5	
15	6	6	0	0	2	
16	5	1	-4	4	20,5	
17	4	2	-2	2	12,5	
18	6	6	0	0	2	
19	8	0	-8	8	29	
20	2	5	+3	3	18	*
21	2	0	-2	2	12,5	
22	6	4	-2	2	12,5	
23	5	7	+2	2	12,5	*
24	7	0	-7	7	26,5	
25	4	5	+1	1	6	*
26	6	1	-5	5	22,5	
27	8	5	-3	3	18	
28	6	2	-4	4	20,5	
29	7	6	-1	1	6	
S					435	

Table 2.

№	O	After .	Shift	Module		Symbol
1	2	3	+1	1	8,5	*
2	4	4	0	0	3	
3	2	1	-1	1	8,5	
4	5	4	-1	1	8,5	
5	8	6	-2	2	17,5	
6	3	6	+3	3	19,5	*
7	0	3	+3	3	19,5	*
8	2	6	+4	4	23,5	*
9	6	4	-2	2	17,5	
10	8	4	-4	4	23,5	
11	1	1	0	0	3	
12	3	1	-2	2	17,5	
13	1	0	-1	1	8,5	
14	5	3	-2	2	17,5	
15	1	5	+4	4	23,5	*
16	4	4	0	0	3	
17	2	1	-1	1	8,5	
18	0	3	+3	3	19,5	*
19	4	4	0	0	3	
20	0	2	+2	2	17,5	*
21	0	1	+1	1	8,5	*
22	6	4	-2	2	17,5	
23	2	2	0	0	3	
24	0	4	+4	4	23,5	*
25	5	2	-3	3	19,5	
S					325	
</table>

<table>
</table>

	Table 3.								Table 4.					

№	O	After.	Shift	Module		Symbol	№	o	After.	Shift	Module		Symbol
1	2	3	+1	1	9	*	1	3	3	0	0	1,5	
2	4	3	-1	1	9		2	4	2	-2	2	17	
3	1	1	0	0	2,5		3	8	4	-4	4	30,5	
4	3	4	+1	1	9	*	4	2	3	+1	1	7,5	*
5	2	5	+3	3	21	*	5	3	1	-2	2	17	
6	5	2	-3	3	21		6	4	6	+2	2	17	*
7	4	3	-1	1	9		7	1	5	+4	4	30,5	*
8	1	2	+1	1	9	*	8	5	4	-1	1	7,5	
9	7	2	-5	5	26,5		9	3	2	-1	1	7,5	
10	3	1	-2	2	16		10	6	5	-1	1	7,5	
11	2	2	0	0	2,5		11	7	8	+1	1	7,5	*
12	3	0	-3	3	21		12	1	0	-1	1	7,5	
13	4	8	+4	4	24,5	*	13	4	1	-3	3	24,5	
14	4	2	-2	2	16		14	2	5	+3	3	24,5	*
15	6	2	-4	4	24,5		15	4	2	-2	2	17	
16	2	3	+1	1	9	*	16	3	5	+2	2	17	*
17	0	1	+1	1	9	*	17	2	8	+6	6	33,5	*
18	1	0	-1	1	9		18	2	6	+4	4	30,5	*
19	0	2	+2	2	16	*	19	1	2	+1	1	7,5	*
20	3	1	-2	2	16		20	8	1	-7	7	35	
21	5	5	0	0	2,5		21	4	3	-1	1	7,5	
22	2	0	-2	2	16		22	6	0	-6	6	33,5	
23	4	1	-3	3	21		23	2	5	+3	3	24,5	*
24	0	5	+5	5	26,5	*	24	4	6	+2	2	17	*
25	3	3	0	0	2,5		25	1	4	+3	3	24,5	*
26	1	4	+3	3	21	*	26	1	2	+1	1	7,5	*
27	1	2	+1	1	9	*	27	3	3	0	0	1,5	
	S				378		28	5	2	-3	3	24,5	
							29	6	4	-2	2	17	
							30	6	3	-3	3	24,5	
							31	8	3	-4	4	30,5	
							32	5	2	-3	3	24,5	
							33	4	2	-2	2	17	
							34	2	1	-1	1	7,5	
							35	1	3	+2	2	17	*
							36	3	0	-3	3	24,5	
								S				666	

300

Table 5.

№	O	After.	Shift	Module		Symbol
1	2	0	-2	2	12	
2	0	6	+6	6	19,5	*
3	1	3	+2	2	12	*
4	2	2	+1	1	7	*
5	5	6	+1	1	7	*
6	1	1	0	0	2,5	
7	1	2	+1	1	7	*
8	1	4	+3	3	15,5	*
9	7	1	-6	6	19,5	
10	3	6	+3	3	15,5	*
11	2	4	+2	2	12	*
12	2	6	+4	4	17	*
13	8	3	-5	5	18	
14	2	2	0	0	2,5	
15	2	3	+1	1	7	*
16	7	7	0	0	2,5	
17	3	5	+2	2	12	*
18	5	6	+1	1	7	*
19	5	3	-2	2	12	
20	2	2	0	0	2,5	
S					210	

Table 6.

№	O	After.	Shift	Module
1	1	2	+1	1
2	1	6	+5	5
3	4	6	+2	2
4	0	0	0	0
5	8	8	0	0
6	0	6	+6	6
7	0	6	+6	6
8	1	1	0	0
9	0	3	+3	3
10	0	5	+5	5
11	4	3	-1	1
12	8	8	0	0
13	7	4	-3	3
14	3	6	+3	3
15	1	2	+1	1
16	6	6	0	0
17	3	1	-2	2
18	6	7	+1	1
19	4	6	+2	2
20	0	0	0	0
21	0	4	+4	4
22	3	4	+1	1
S				

Conclusions to Table 1. The resulting Temp value falls into the zone of significance. This indicates that from February to May 2010, there were significant changes in the attitude of students to teaching in grade 2 "B". Since one of the main indicators of the efficiency of the technology of constructing new opportunities is the change of educational motivation from negative to positive, the obtained result indicates the success of the educational process.

The applied educational technology has significantly changed the attitude to teaching in students of the experimental class. On the basis of the calculations made, it can be stated that the results of changes obtained in the experiment are not accidental and are significant on the 1% level.

Conclusions to Table 2. The resulting Temp value falls into the zone of insignificance. This indicates that there are no statistically significant differences in student attitudes between February and May 2010 in grade 2 "A". Consequently, it can be argued that the educational technology used in this grade does not change the learning motivation of students in any way.

Conclusions to Table 3. The resulting Temp value falls into the zone of insignificance. This indicates that there are no statistically significant differences between February and May 2010 in 2 "B" class. Therefore, it can be argued that the educational technology used in this class does not change the learning motivation of students in any way.

Conclusions to Table 4. The resulting Temp value falls into the zone of insignificance. This indicates that there are no statistically significant differences in the 2 "A" class between February and May 2010. Therefore, it can be argued that the educational technology used in this class does not change the learning motivation of students in any way.

Conclusions to Table 5. The resulting Temp value falls into the zone of insignificance. This indicates that there are no statistically significant differences between February and May 2010 in 2 "D" class. Therefore, it can be argued that the educational technology used in this class does not change the learning motivation of students in any way.

Conclusions to Table 6. The resulting Temp value falls into the zone of insignificance. This indicates that there are no statistically significant differences between February and May 2010 in 2 "B" class. Therefore, it can be argued that the educational technology used in this class does not change the learning motivation of students in any way.

Attitudes to academic disciplines before and after lessons in the experimental class.

Conclusions. At the beginning of the experiment a positive attitude to the discipline "Natural Science" was registered in 10% of students. At the final stage, a positive attitude to the discipline "Nature studies" was registered in 75% of students. Thus, a positive attitude towards the natural sciences discipline was registered in the experimental class. While in respect of the rest of the subjects which were based on classical educational technologies, negative dynamics were registered in the experimental class. This proves that teaching students the technology of constructing new opportunities leads to a constant increase in learning motivation.

In order to draw a conclusion on the presence/absence of a statistically significant similarity/difference between 10% (90%) and 75% (25%), the Fisher criterion of the angular transform was applied (e.g. [294, p.165] [p295, p.158]).

The results obtained as a result of special mathematical processing give grounds to assert that the change in the attitude of students of the experimental class to the experimental discipline "Natural History" from negative (90%) to positive (75%) is confirmed reliably at the level of significance 1%.

Attitude to the experimental educational discipline "natural science".

Conclusions. It can be seen from the results of the research that interest in the experimental educational discipline "natural science" (question 1, 21) has increased. The number of students having difficulties in learning the subject has decreased from 31% to 24% (question 5). The number of students who did not consider that observation and intelligence were required in classrooms was halved (question 8). The attitude of parents towards the experimental subject "natural sciences" has changed positively (question 13). The psychological atmosphere in the pupil-teacher relationship has improved (question 14). The number of pupils with a deficit of positive assessment by a teacher decreased from 44 per cent to 13.5 per cent (question 15). The number of students dissatisfied with the study of the experimental discipline "natural sciences" was halved (question 17).

At the same time, the number of students who believe that only individual lessons are interesting (question 12), primarily of a practical nature, has increased.

The results of the parental survey.

1. **Stelle Edward (Mom)**

1. Question. Have you noticed any changes in your child in the last 4 months? If so, which ones?

The answer. "The child began to read more books (cognitive encyclopedias, etc.) information related to the planets, atoms, chemistry, formation of the Earth".

2. Question. In your opinion, are these changes related to natural history lessons?

The answer is. "Maybe."

3. Question. Does your child discuss natural history lessons at home? - The answer is. "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "On the questions he had in class, and he is confident in the information."

7. Do you think your child's attitude towards the subject of "naturalness" differs from that of all other subjects? - "He's interested in all subjects."

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: The parent is aware of the nature lessons, the lessons at home are discussed by all together. The parent has noticed changes in the child in the last 4 months and possibly links them to the natural history lessons.

2. **Polenov Daniel (mother).**

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "The child has grown four months older."

2. In your opinion, are these changes related to natural history lessons? - "Maybe in conjunction with other lessons."

3. Does your child discuss natural history lessons at home? - "No."

4. Did you notice that your child started asking more questions? - "No, he

always asks a lot of questions."

5. Have you noticed that your child has become more independent? - "No."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "As always."

7. Do you think that your child's attitude towards the subject "He loves nature since infancy, reads encyclopedias on the animal world, is interested in dangerous animals" is different;

8. Is your child interested in attending a natural history class? - "I can't say for sure, it wasn't discussed."

Conclusion: The parent is aware of the nature lessons, but the child does not discuss the lessons at home with the parents. The parent does not know what topics were taught during the lessons, this can be seen, for example, from answer 7. There were no topics specifically related to animals in the natural history lessons.

3. Karpova Catherine (Mom)

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, more inquisitive."

2. In your opinion, are these changes related to natural history lessons? - "Yes."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes."

7. Do you think your child's attitude towards the subject "My child really likes this subject" is different.

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: the parent is aware of the nature lessons, the lessons at home are discussed. Katya together with her parents was doing her homework.

4. Rushanova Karina (mother).

1. Have you noticed any changes in your child in the last 4 months? If so,

which ones? - "Yes, she's become more interested in the world around her, she watches scientific films, reads books".

2. In your opinion, are these changes related to natural history lessons? - "Yes, they are."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Arguing on all questions and everything."

7. Do you think your child's attitude towards the subject "I don't know, didn't pay attention" differs.

8. Is your child interested in attending a natural history class? - "Very interesting."

Conclusion: Carina's mother is aware of the nature lessons, the lessons at home are discussed. At the parents' meeting her mother asked questions related to the content of the nature lessons. The changes that have occurred to Carina are linked by her mother to the lessons of natural history.

5. Kaluzhnaya Maria (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "No."

2. In your opinion, are these changes related to natural history lessons? - "*no comment*."

3. Does your child discuss natural history lessons at home? - "Discusses, really likes."

4. Did you notice that your child started asking more questions? - "Yes, of course."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes."

7. Do you think your child's attitude towards the subject "I can't say it's

fundamentally different, but the subject the child likes very much".

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: Masha's mother knows about nature lessons because she works as a music teacher at this school. The nature lessons are discussed at home. Mom has not noticed any changes in the child. She was suspicious about the survey at the parents' meeting.

6. Cai Alina (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, she's become more inquisitive."

2. In your opinion, are these changes related to natural history lessons? - "Yes."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes, mostly on issues of natural history."

7. Do you think your child has a different attitude towards the subject "Yes, she likes it very much".

8. Is your child interested in attending a natural history class? - "Yes, very."

Conclusion: Alina's mother knows about nature lessons, the child at home discusses the lessons with her parents. At the meeting, Alina's mother asked if there would be a natural science class in the 3rd grade.

7. Moustache Eugenia (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, I've become more curious."

2. In your opinion, are these changes related to natural history lessons? - "Possibly."

3. Does your child discuss natural history lessons at home? - "Sometimes."

4. Did you notice that your child started asking more questions? - "Noticed."

5. Have you noticed that your child has become more independent? - "Yes, the

urge to do so is there."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes."

7. Do you think your child's attitude towards the subject "Likes" differs.

8. Is your child interested in attending a natural history class? - "Interesting."

Conclusion: Zhenya's mother knows that there were lessons in natural history. According to Zhenya herself, her mother helped her with her homework. Eugenia, according to her parent, has become more curious, and presumably it is associated with the lessons of natural history.

8. Pisanko Victoria (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes."

2. In your opinion, are these changes related to natural history lessons? - "Yes."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes."

7. Do you think your child has a different attitude towards the subject "Yes".

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: the parent is aware of the nature lessons, the lessons at home are discussed. At the meeting my mother did not ask any questions, answered the questions without thinking.

9. Borangasiev Anuar (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, more interested."

2. In your opinion, are these changes related to natural history lessons? - "Yes."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes."

7. Do you think your child has a different attitude to the subject "Not very".

8. Is your child interested in attending a natural history class? - "Yes."

Borangasiev Anuar (Papa)

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Expanded my horizons."

2. In your opinion, are these changes related to natural history lessons? - "Yes, they are."

3. Does your child discuss natural history lessons at home? - "Yes, it does."

4. Did you notice that your child started asking more questions? - "Yes, we did."

5. Have you noticed that your child has become more independent? - "No, I haven't."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes, I noticed."

7. Do you think your child's attitude towards "No Difference" is different.

8. Is your child interested in attending a natural history class? - "Yes, it is."

Conclusion: Anuar's parents know about nature lessons. They have both noticed changes in the child and associate them with the lessons. The child was interested in attending nature lessons.

10. **Chatterbox Deniza (mother).**

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Noticed, became more attentive, interested in the world around her."

2. In your opinion, are these changes related to natural history lessons? - "I think so."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Noticed, arguing on different issues."

7. Do you think your child's attitude towards the subject "particularly likes this subject" is different.

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: the parent is aware of the nature lessons, the lessons at home are discussed. At the meeting, mother listened with interest to information about the technology used in the lesson. She did not ask any questions.

11. Muzafarov Maxim (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "No."

2. In your opinion, are these changes related to natural history lessons? - "*no comment*."

3. Does your child discuss natural history lessons at home? - "No, other subjects too."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "No."

7. Do you think your child has a different attitude towards the subject "Yes, it's his favorite subject".

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: Maxim's mother knows about nature lessons, but these lessons, like everyone else, are not discussed at home. At her parents' meeting, her mother asked about the content of the discipline. She was also interested in the children's behavior, and asked to tell her parents about each child.

12. Frolov Alexei (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "No special changes."

2. In your opinion, are these changes related to natural history lessons? - *"no comment."*

3. Does your child discuss natural history lessons at home? - "Maybe with Grandma."

4. Did you notice that your child started asking more questions? - "He always asks the questions that interest him."

5. Have you noticed that your child has become more independent? - "He's always on his own."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "He always stood up for his point of view."

7. Do you think your child has a different attitude towards the subject "Yes, he began to draw more birds, animals".

8. Is your child interested in attending a natural history class? - "Very interesting."

Conclusion: The parent is aware of the nature lessons, the lessons at home are not discussed. This can be seen from the parent's answers.

13. Dosbaeva Nesibel (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, very active, more independent."

2. In your opinion, are these changes related to natural history lessons? - "Yes."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes, and everything is interesting."

7. Do you think your child has a different attitude towards the subject "Yes".

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: The parent is aware of the nature lessons. The lessons are discussed between the child and the parents at home. The homework assignment was always discussed together. The parents have noticed the changes in the child and associate them with the lessons of natural history.

14. Rozia Yubuzova (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, there are more questions."

2. In your opinion, are these changes related to natural history lessons? - "I don't know."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Seems to have become more independent."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes."

7. Do you think your child has a different attitude towards the subject "Yes".

8. Is your child interested in attending a natural history class? - "Of course, she comes and tells about everything."

Conclusion: The parent is aware of the nature lessons, the lessons at home are discussed with great interest. At the meeting, my mother asked questions specifically about what topics we were taking in the lessons. Mom noticed the changes in the child, but she doesn't know if the changes are related to the natural history lessons, as Rozia joined this class in March.

15. Friesorger Angela (Dad).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "*no comment*."

2. In your opinion, are these changes related to natural history lessons? - "*no comment*."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "*no comment*."

5. Have you noticed that your child has become more independent? - *"no comment."*

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "*no comment*."

7. Do you think that your child's attitude towards the subject "Homework performed with great interest and very conscientiously".

8. Is your child interested in attending a natural history class? - "Yes, very."

"Angela is always very sociable and quite independent. It's hard to connect it with nature," wrote Angela's dad. **Conclusion: The** parent is aware of the nature lessons, the lessons at home are discussed. Parents have not noticed any changes in the child.

16. Orazbek Aldiyar (Dad).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "No."

2. In your opinion, are these changes related to natural history lessons? - "I don't know."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "No."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "No."

7. Do you think your child has a different attitude towards "I don't know"?

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: The parent is aware of the nature lessons, the lessons at home are discussed with great interest. According to the parent, the child has not changed in the last four months.

17. Gabriela Salkynbekova (mother).

1. Have you noticed any changes in your child in the last 4 months? If so,

which ones? - "Yes."

2. In your opinion, are these changes related to natural history lessons? - "Possibly."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "No."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes."

7. Do you think your child's attitude towards the subject "I didn't notice" differs.

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: Gabriela's mother knows about nature lessons. At the meeting, she was skeptical about the survey. Mom noticed the changes in the child in the last four months of her studies.

18. Nut Daniel (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, I've noticed. I've become more responsible in my studies."

2. In your opinion, are these changes related to natural history lessons? - "Most likely."

3. Does your child discuss natural history lessons at home? - "Sometimes."

4. Did you notice that your child started asking more questions? - "Yes, it is."

5. Have you noticed that your child has become more independent? - "Something about."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "He became more aware of certain issues."

7. Do you think your child's attitude towards the subject is different?

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: The parent is aware of the nature lessons, the lessons at home are discussed with great interest. The mother associates the changes that took place

in the child with the lessons of natural history. Before the meeting, Mom asked questions about the features of the technology used in the lessons.

19. Nonko Kirill (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, he's expressing his point of view."

2. In your opinion, are these changes related to natural history lessons? - "Probably."

3. Does your child discuss natural history lessons at home? "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Always arguing, expressing her point of view, on different issues."

7. Do you think your child's attitude towards the subject "Yes, it is different. I like it very much."

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: the parent is aware of the nature lessons, the lessons at home are discussed with the parents. According to his mother, Kirill started to express his point of view at home. Kirill likes the subject very much.

20. Ushurbakiev Diyar (mother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, he's become more independent, responsible."

2. In your opinion, are these changes related to natural history lessons? - "*no comment*."

3. Does your child discuss natural history lessons at home? "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "*no comment*."

7. Do you think your child's attitude towards the subject "I think it's different" is different.

8. Is your child interested in attending a natural history class? - "Yes, it is."

Conclusion: the parent is aware of the nature lessons, the lessons at home are discussed. During the last four months of study, my mother noticed that the child has become independent and responsible. Mom did not ask any questions at the meeting.

21. Sergey Nosov (grandmother).

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "No significant changes observed."

2. In your opinion, are these changes related to natural history lessons? - "*no comment.*"

3. Does your child discuss natural history lessons at home? - "We discuss all subjects little by little."

4. Did you notice that your child started asking more questions? - "No."

5. Have you noticed that your child has become more independent? - "No."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "He's always loved to argue, on any occasion."

7. Do you think your child's attitude towards the subject "Hard to say yet" differs.

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: Seryozha's grandmother is raising him, and she helped him to do his homework. About the lessons of natural sciences grandmother knowledge, and changes in the child has not noticed.

22. Sabitova Ilsina (Dad).

1. Have you noticed any changes in your child in the last four months? If so, which ones? - "No."

2. In your opinion, are these changes related to natural history lessons? - "No."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "No."

5. Have you noticed that your child has become more independent? - "No."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "On all."

7. Do you think your child's attitude towards "She likes" is different.

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: the parent is aware of the nature lessons, the lessons at home are discussed. At the meeting, Dad was sceptical about the survey and did not want to answer the questions. He did not notice any changes in the child.

23. **Zakiriyarova Alina (mother).**

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, more arguing."

2. In your opinion, are these changes related to natural history lessons? - "Probably not, the child is growing and developing."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Noticed."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Always arguing, always having a point of view."

7. Do you think that your child's attitude towards the subject "Yes, very different, the subject is very much like it".

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: the parent is aware of the nature lessons, the lessons at home are discussed. Mom did not ask any questions at the meeting.

24. **Romanyuta Arthur (Mother)**

1. Have you noticed any changes in your child in the last 4 months? If so, which ones? - "Yes, the child's interest has increased."

2. In your opinion, are these changes related to natural history lessons? - "Yes."

3. Does your child discuss natural history lessons at home? - "Yes."

4. Did you notice that your child started asking more questions? - "Yes."

5. Have you noticed that your child has become more independent? - "Yes."

6. Have you noticed that your child started arguing by expressing his point of view? On what issues? - "Yes."

7. Do you think your child has a different attitude to the subject "Not very".

8. Is your child interested in attending a natural history class? - "Yes."

Conclusion: the parent is aware of the nature lessons, the lessons at home are discussed.

Findings from the parental survey.

1. 24 parents answered the questionnaire.

2. Of these, 17 have noticed changes in their children in the last four months. Among the changes are: a more active child, more independent, more curious, began to take responsibility for learning, began to express their views, the interest of the child has expanded, became more attentive.

Eight parents didn't notice any change.

3. Out of 17 parents, 11 relate these changes to the lessons of natural sciences, the other 7 parents expressed doubts.

4. 20 students of the class discuss lessons at home with their parents.

5. In 13 children, the attitude to the subject of nature is different from the rest.

The results of observations of changes in students in the experimental class.

1. **Stella Edward, 7 years old.**

Edward has been present at almost every natural science class since the beginning. He found contact with the teacher without difficulty. He willingly answered questions and expressed his opinion, and spoke to his classmates at the blackboard without hesitation. Edik expressed interesting thoughts and remarks during the conversation on a given topic. During the lessons, he was often distracted by extraneous matters. Over time, when the lessons began to be practical, Edward tried not to be distracted and was extremely attentive in the lessons.

2. Polenov Daniel, 8 years old.

Daniel had easy contact with the teacher from the very beginning of the lessons. During the lessons he always expressed only his point of view. He followed the rules of conduct developed during the lessons. Just like other students, Daniil was not easily given the formulation of definitions and independent work. But by the end of the academic year, Daniel showed an active interest in the lessons, where children performed practical work. He carefully studied the task, watched the time and controlled the work of a neighbor at the desk.

3. Ekaterina Karpova, 7 years old.

Since the beginning of the lessons, Katya has had difficulty disciplining herself and concentrating on her work. Katya often had to have a transplant and couldn't sit comfortably with anyone in the class. Katya did not give an accurate answer to the questions, she did not give her opinion, but only repeated what someone had already said.

After Ekaterina was in the role of a teacher's assistant and monitored compliance with the rules of conduct, she herself, later began to behave calmly. Trying to get into the task, with diligence performed it. She was able to express her personal opinion later on.

4. Rushanova Karina, 8 years old.

Since the beginning of the lessons, Carina has shown herself to be a sociable child. With regard to her studies, it was not visible that she was anxious to study and do her homework. She was constantly distracted by distractions, and most of the time she had not heard what was being said in class. Carina did not express her point of view, but only said what she would hear.

Carina has acted as a teaching assistant several times. More than once she had to work in pairs, not with a classmate, and in pairs with a teacher. Therefore, almost all the responsibility for performing paired work lay with her. By the end of the school year, Karina was able to express her opinion and learned to evaluate her work.

5. Kalyuzhnaya Maria, 8 years old.

Since the start of the classes, Masha rarely pulled her hand to answer when she was raised, her point of view was eagerly expressed. In the beginning, it was difficult for Masha to start formulating definitions on her own, watching the

time and thinking about how to do the task. But by the end of the school year, Masha was able to cope with all these tasks on her own and in pairs.

6. Cai Alina, 8 years old.

Alina was not active during the lessons, so no special changes could be detected.

7. Moustache Eugenia, 8 years old.

Gianni sits on the last desk with Arthur, who keeps distracting her from work. At the beginning of her acquaintance with her teacher, Zhenya took little part in the discussion, not expressing her opinion, but repeating herself after someone else. Zhenya acted as a teacher's assistant, actively urged the class to be silent, to observe the rules. Subsequently, Zhenya herself learned to observe the rules of conduct.

8. Pisanko Victoria, 8 years old.

Since the beginning of the lessons on natural sciences, Victoria has willingly participated in the discussion of the topic. Victoria has repeatedly spoken at the lessons as a teacher's assistant, always striving to perform the task with maximum accuracy. Vika was very embarrassed when speaking in front of the class, but gradually this embarrassment was overcome, and Vika went out on her own without a clue and took on the role of responsible for the rules of conduct in class, indicating to others which of the rules are being violated at the time.

9. Borangasiev Anuar, 8 years old.

Anuar was often absent from class due to health reasons, so no particular changes were detected.

10. Denisa Chatterbox, 8 years old.

Denise was present at all the lessons of natural history. She's sitting at the same desk as Maxim, who distracted her with extraneous affairs. It was difficult for this couple to solve the task together and complete the task. Later on, these guys were seated. At the same desk with her was planted a strong class student, and since it primarily meant a paired system of work and a joint report, Deniza was forced to "pull" for his partner. As a result, the problem with Deniza's discipline was solved.

11. Muzafarov Maxim, 7 years old.

Maxim proved to be a hyperactive child, constantly distracted by the operator, but despite this, he answered the questions with the utmost precision. During the lessons it was found out that the subject of hyperactivity was his deskmate, so it was decided to transfer him to another place. After that, Maxim proved to be a disciplined student with good potential.

12. Frolov Alexei, 8 years old.

Frolov Alexei is an excellent student. I didn't find the contact with the teacher right away. At first Alyosha rarely pulled his hand to answer, but when it was his turn to express a point of view, he willingly shared it with classmates and the teacher. Working together with Gabriela, Alyosha always monitored compliance with the rules of work and evaluated the work objectively. At the beginning of the classes it was difficult for all the children to formulate definitions, and by the end of the school year Alyosha was able to formulate his own definition of the term "Property of matter".

13. Dosbaeva Nesibel (Nesha), 8 years old.

Since the beginning of the lessons in this class, Nessebelle has taken an active interest in the opportunity to express her point of view. Nesha is an excellent student. In the lessons of natural sciences, she followed the rules of behavior. In some of the lessons at the same desk as Nesha, according to the teachers of the incapacitated child, Maxim was placed with a difficult discipline. Nesebel managed to draw Maxim's attention to the subject, and compliance with the rules. In the last lesson, the pair managed to solve the difficult problem in an excellent way. Nesha always actively called for silence in the lessons. She acted as a teacher's assistant.

14. Yubuzova Rozia, 8 years old.

Rozia moved to 2nd "B" class in March 2010, when all students were familiar with both the teacher and the structure of the lesson. Rose is a good student. But in the process of conducting the lessons, we came across the fact that Rozia can't answer when the whole class is listening to her. According to her, she is scared and uncomfortable talking when everyone listens. Also, she wasn't paying attention in class because she couldn't figure out what to do.

At the end of the school year, it was difficult for Rosia to go out to the blackboard and present her work, but she still tried to cope with her fear.

15. Friesorger Angela, 8 years old.

Angela is a very active child, she was not distracted by the lessons, always listened attentively to the teacher, did the work in good faith. Angela most often sat at the same desk with Davtyan Narek. They were in constant conflict. But as soon as practical lessons began, their couple performed the task very well. Angela always watched whether she was doing this or that task correctly. By the end of the school year, Angela had learned to check the work of her deskmate and evaluate the correctness of her couple's work.

16. Orazbek Aldiyar, 7 years old.

From the first lessons Aldiyar had his own point of view on all questions. Despite this, he easily agreed with the general opinion. During the discussions he expressed his thoughts extensively, sometimes losing the main thread of his reasoning. There were no radical changes, but Aldiyar learned to follow the rules of discussion, to follow the time of the task.

17. Gabriela Salkynbekova, 8 years old.

Gabriela was not active during the lessons, so no particular changes could be identified.

18. Nut Daniel, 8 years old.

During the lessons Daniel was not particularly active and no obvious changes were detected during the study period. Though parents speak about the presence of personal changes.

19. Nonko Kirill, 8 years old.

At the beginning of classes, the child was already characterized by a high level of intellectual development, education and independence. Therefore, during the lessons he or she showed himself or herself as an active participant of the general discussion, but it was not possible to determine significant changes.

20. Ushurbakiev Diyar, 8. (*"no comment"*).

21. Zakiriyarova Alina, 8 years old.

A couple in the lessons took a passive position, they rarely took part in the general discussion. Therefore, no obvious changes were noted.

22. Sergei Nosov, 8 years old.

Sergei was often absent from his classes due to his health condition, which led to the uneven development of independence. The changes that took place were sporadic. But, with those tasks that were at the lessons, where he was present, coped well, which allows to assert that the systematic application of technology in this case could lead to a positive result.

23. Sabitova Ilsina, 8 years old.

In her first lessons, Ilsina behaved shyly and tried to keep silent. The teacher did not answer her direct questions. According to other teachers working in this class, Ilsina behaves approximately in the same way at all lessons. In the course of further lessons, when the class moved to the level of paired and micro-group work, Ilsina stopped feeling shy, began to speak openly, and later, and defend his point of view, but during the speeches in front of the class and the teacher felt a little embarrassed. In the last lessons this constraint was overcome as well, the child felt comfortable participating actively in pair, micro-group and general discussions.

24. Romanyuta Arthur, 8 years old.

Throughout the entire experimental cycle of classes, Arthur was characterized by undisciplined behavior, constantly distracted, although all the tasks he tried to perform with precision. This can be explained by the fact that he was an independent child from the very beginning. No significant changes could be detected.

25. Shishkov Yaroslav, 8 years old.

Yaroslav was often absent from classes due to his health condition, so no special changes were detected.

26. Nikita Poltoratsky, 8 years old.

According to the pedagogical staff and the school psychologist, Nikita is a complex, conflict child who has repeatedly shown aggression towards classmates and other schoolchildren. However, in the lessons of natural history, this was not clearly confirmed. Contrary to the general opinion, Nikita behaved disciplined, repeatedly acted as an assistant teacher. He has never shown any aggression towards anyone. Nikita actively participated in all kinds of discussions, and in case of public opinion pressure, took part in the common view. During the last lessons, Nikita took responsibility for observing the

structure of the task, watched the time in the pair. At the same time, the pair performed the assigned tasks perfectly.

General conclusions from the experimental study.

1.   It was found that as a result of the experimental teacher training technology used in the pilot study, the motivation of teachers changed from negative to positive.

2.   As a result of the research, it was found that the experimental class, which was trained under the conditions of the technology of constructing new opportunities, changed its attitude to teaching from negative to positive, while in the control classes, which were trained under the conditions of classical educational technologies, the educational motivation either remained unchanged or changed in the negative direction.

3.   In the course of the research in the experimental classroom, the attitudes towards academic disciplines before and after the research were analyzed. The result showed that there was a sharp increase in interest in the experimental course of "natural science", while there was no significant change in attitudes to the other disciplines.

4.   In the course of the research in the experimental class the attitude to the subjects "knowledge of the world" and "nature" as related was studied. The result showed that after the experimental course, there was a quantitative decrease in the number of negative responses in relation to the academic discipline.

5.   At the end of the research, parents of the students of the experimental class were interviewed in order to obtain external confirmation of the experiment results. At the same time, more than 60% of parents noted a change in the child's attitude to the learning process and the same number of parents directly related these changes to the lessons of natural history.

6.   Personal observations were made of each student in the experimental class in order to analyse the changes in more depth. These observations also confirmed the research hypothesis.

5.5.2 Methodological results

To the basic methodical results of experimental research we refer the educational technology of knstruktsirovanija new possibilities as a way of the organization of self-development due to manufacture of new values as its

psychological means. The educational technology of designing new possibilities is based on the structure of transition between subject activities of different historical type. Historical types of subject activities differ in the nature of their mediocrity. The first type of activity reveals the ordered states of the subject properties of cultural objects, mediated by the sensory ideal form, which is a product of the experiencing consciousness. The second type of activity is the ordering of the number of subject properties of cultural objects, mediated by the perceptual ideal form, which is a product of intuitive consciousness. The third type of activity is an ordering number of subject forms of cultural objects mediated by the rational form of reflexive consciousness. The fourth historical type of activity - ordering the quantity of historical forms of cultural objects, mediated by the historical form of reflexive consciousness.

Transitions between historical types of subject activities are ensured by design activities. Its structure is the psychological basis of the educational technology of self-development, the subject of which is the production by students of new ideal forms of their own activity as a means of its organization. Twenty-one basic components of educational technology are allocated, corresponding to twenty-one consistently performed actions in the structure of creative activity.

5.5.3 Theoretical results

To the first group of theoretical results of the experimental study we attribute the psychological concept of self-development. This concept proceeds from the understanding of man as a source of cultural, social and self development. The necessity of its creation is connected with the necessity to consider another type of human existence determinacy that differs from both the causal and target ones. This type of determinacy is a historical (creative) determinacy, the essence of which is not the natural nature as a determinant of "external" image of deterministic development, but artificial nature as a determinant of self-development. This means that in the case of socially conditioned development, the developing (or more correctly, the developing) person finds the determinants of his or her development in the "external" socio-cultural environment. The "external" nature as a determinant of socially conditioned development unambiguously sets the adaptive (or functional; "horizontal") nature of development. This statement applies equally to the social reflexive and cultural-historical concepts of development.

In our opinion, it is possible to overcome the adaptive (functional; "horizontal") character of development only if we consider development not

as a way of "ingrowth", inclusion, entering into the naturally formed socio-cultural environment, but as a way of constructing the socio-cultural environment itself. In this case, development acquires the character of self-development in the sense that development as qualitative self-change becomes possible only as a result of production of means of development by the developing person himself. Since a human being is a culturally mediated being, a new type of culture acts as a new means of self-development. In particular, an ideal form of culture of a new historical type. In the conditions of education, self-development becomes possible through the design of an educational situation based on the historical principle as a sequence of alternating historical types of subject-cultural situations. The initial situation that determines the self-development becomes the genetic problem, which is a contradiction between the way of the subject activity of the previous historical type and the subject-cultural situation of the new historical type. As a way to solve the genetic problem is a constructive activity, which is a form of self-development organization.

To the second group of theoretical results of the experimental study we refer historical periodization of ontogenesis as self-development. It is based on the criterion of mediocrity of subject activity and represents stages of "vertical" and "horizontal" vectors of self-development, expressing a spiral model of the self-development process.

The peculiarity of the "vertical" vector of self-development is that it is a vector of emergence of a new type of subject activity. The feature of the "horizontal" vector of self-development is that it is a vector of formation of a new historical type of subject activity, which has arisen in the "vertical" direction.

The difference of the proposed periodization of self-development from the existing in the psychology of development periodization of mental development is that the transition from one stage of development to another occurs as a result of independent intersubjective constructive activity, the subject of which is the production of new psychological means of self-development (values of a new type).

Periodization of ontogenetic self-development looks like this.

1. Inter-subjective communication that generates sensory values.

2. Sensor-mediated activity.

3. Inter-subjective communication that generates perceptual values.

4. Sensory form of perceptual-mediated activity.

5. Perceptual form of perceptual-mediated activity.

6. Inter-subject communication that generates symbolic meaning.

7. A sensory form of sympathetically mediated activity.

8. The perceptual form of a symbolic-mediated figure-

I'm sorry.

9. The symbolic form of the symbolically mediated figure-

I'm sorry.

10. Inter-subjective communication that gives rise to historical meanings.

11. Sensory form of historically mediated activity.

12. A perceptual form of historically mediated activity.

13. Symbolic form of historically mediated activity.

14. Historical form of historically mediated activity.

To the third group of theoretical results of experimental research we refer the model of creative mediating as a mental mechanism of self-development (the mechanism of reconstruction of an ideal form of activity as a means of constructing its real form).

The causal mediating mechanism "works" when isomorphism between external causes and internal conditions is relevant. In this case, the external cause acts as an internal determinant of the reflex action, which is the process of forming internal conditions on the basis of the inductive logic "from single to common".

The mechanism of symbolic mediation "works" when there is a relationship of isomorphism between objective ideal forms of cultural objects (motives) and subjective ideal forms (goals) of subject activities. In this case, the objective ideal form of a cultural object (motive) acts as an internal determinant (goal) of the subject activity, which is the process of forming a cultural object on the basis of a deductive logic "from common to single".

The mechanism of creative mediating "works" when there is a relationship of genesis between types of subject activities. In this case a new type of subject

activity acts as a determinant of constructive and formative activity, which is a process of creating a new type of subject activity on the basis of historical genesis logic.

5.5.4 Methodological results

We consider the creative-experimental method *to be the main methodological results of the* experimental study. This method was developed for the organization of self-development, understood as a qualitative change in the level of mediocrity of individual subject activities, primarily due to the production by man of its new ideal forms.

So far, two types of methods for organizing cognition as appropriation of ideal forms have been developed in psychology. Fundamental scientific psychological schools were composed of scientists who preferred one of the two methods. The most vivid example of such schools in Russian psychology is the social and reflexive psychological school (S.L.Rubinshtein, K.A.Abulkhanova-Slavskaya, A.V.Brushlinsky, A.M.Matyushkin, I.S.Matyushkin).Yakimanskaya, D.B.Bogoyavlenskaya, etc.) and cultural-historical psychological school (L.S.Vygotsky, A.R.Luria, A.N.Leontiev, A.V.Zaporozhets, L.I.Bozhovich, D.B.Elkonin, P.Y.Galperin, M.I.Lisina, V.V.Davydov, etc.).

The social-reflective psychological school focused its efforts on the method of inductive cognition, based on the assignment of ideal forms by the mechanism "external causes - through internal conditions". ("external - from internal"), i.e. on inductive cultural consumption. This method was developed by S.L.Rubinstein and later implemented in educational practice in the form of personally-orientedlearning technology (I.S.Yakimanskaya). The cultural-historical psychological school has concentrated the efforts on a method of deductive cognition based on assignment of ideal forms on the mechanism of interiorization ("internal - from external"). That is, also on the consumption of culture, but on the basis of another mental mechanism. This method was developed by L.S.Vygotsky and later implemented in educational practice as a technology of developing learning (D.B.Elkonin-V.V.Davydov). There are several modifications of this method in cultural-historical psychology: L.S.Vygotsky's experimental-genetic method, P.Y.Galperin's method of forming experiment and V.V.Davydov's method of genetically modeling experiment.

The practical consequence of the creative-experimental method is a system of

principles for the construction of "through" academic disciplines. The main principle of constructing such disciplines is the historical principle of complication of subject tasks. Another principle is the principle of designing a system of academic disciplines. It means that the logic of complication is based not only on individual disciplines, but also on the whole system of academic disciplines. A "transversal" discipline is a system of academic and subject problems, the ways of solving them are by students themselves.

The development of "transversal" subjects requires a historical analysis of the corresponding system of subject knowledge, which results in the formulation of an initial basic genetic contradiction, which as a subject content sets and determines the qualitative specificity of subject knowledge in its own history of development. Particular attention in the development of "transversal" disciplines and the entire "transversal" system of subjects should be paid to periods of change in historical types of subject knowledge, since it is transitions and changes in types of subject knowledge that define both the subject and psychological content of creative education.

The basic structure of a subject situation (subject structure of knowledge) sets and defines the basic psychological structure of educational and cognitive activity. And the subject structure of transition from one historical type of subject knowledge to another sets and defines the psychological structure of constructive activity as a transition from the subject activity of one historical type to the subject activity of another historical type. It means that the structure of the subject and genetic problem sets the structure of psychological and genetic problem. That is, it completely defines the logic and character of inter-subject constructional activity (creative educational process).

Conclusions on section five. The concept of the experimental study was the provision that the essence of education, which is designed to bring up the ability to self-development, is not appropriation (cultural consumption), but the production of culture by students (cultural activities). Cultural production is made possible by the practical implementation of the following organizational chart.

1.   Analysis of the problem situation and formulation of the genetic problem as a contradiction between the new type of subject culture and the previous type of subject activity.

2.   Formulation of a hypothesis as a way to solve a problem: it is necessary to bring a new type of object culture and object activity into conformity as a

way of its reproduction. This requires transforming an existing type of subject activity into a new type of subject activity.

3.   To do this, apply historical reflexion and reconstruct the history of the development of object culture.

4.   As a result of subject reflexion, construct a historical logic of the development of subject culture.

5.   As a result of psychological reflection, to transform the historical logic of the development of subject culture into the historical logic of the development of subject activity.

6.   As a result of constructive reflection, a new type of value is constructed using the logic of the development of the subject activity.

7.   With the help of the constructed value of the new type, gradually, on actions to construct all structure of subject activity of new historical type.

On the basis of comparison of classical concepts of ontogenetic development and the concept of ontogenetic self-development, it is concluded that processes of assignment of ideal forms and processes of designing ideal forms are based on essentially different mental mechanisms. As a result of such comparison, the main hypothesis of the experimental research became the following: construction of ideal forms as means of self-development by students themselves will be possible if the mechanism of social mediating (the mechanism of assigning ideal forms) is changed to the mechanism of historical (creative) mediating (the mechanism of producing ideal forms). The following private hypotheses were confirmed as the main stages of confirming the main hypothesis.

1.   The causal mechanism is a mental mechanism of inductive assignment of ideal forms. The limitations of the causal mechanism were shown.

2.   Marker mechanism is a mental mechanism of deductive assignment of ideal forms. The limitations of the symbolic mediating mechanism were shown.

3.   Human social nature is a factor contributing to externally determined development. The limitations of human social nature and the impossibility to organize self-development processes on its basis were shown.

4.   The culture-promoting educational environment for self-development should be based on the historical nature of man and represent subject situations,

the method of solving which is self-development, and the method of its organization - creative experiment.

5.   The psychological mechanism of internally conditioned development (self-development) is the mechanism of creative mediation (the mechanism of reconstruction of an ideal form of activity as a means of constructing its real form).

CONCLUSIONS

As a result of the analysis of sources (section 1), it was established that the determinants of individual development presented in all modern concepts of ontogenetic development have "external" nature. Thus, the first private hypothesis can be considered proven.

As a result of research of theoretical models of individual development, which are presented in modern concepts of individual development (section 2), it was shown that mental mechanisms of individual development, discussed in all modern concepts of development, are mechanisms of assignment of "external" determinants. In this connection, only one type of development is actually presented in modern concepts of ontogenetic development, namely, the "-horizontal" type of development (formation). It follows that the second private hypothesis can be considered proved.

As a result of the analysis of models of psychic mechanisms of individual development available in modern psychology and their critical rethinking, a model of the mechanism for producing "internal" determinants of self-development was created (Section 3). This mechanism is creative mediation (reconstruction of an ideal form as a means of constructing a real form), and individual self-development on the basis of this mechanism is carried out at the expense of production of ideal forms (values) by students themselves. In this connection, it can be considered that the third private hypothesis is proven.

The critical analysis of the induction-based natural science method and the experimental genetic method based on deduction led to the conclusion that these methods cannot be used as methods for organizing self-development. The method of creative experiment based on induction (transformation of existing facts into new hypotheses), the model of which was proposed in Section 4, can be used as a method of organization of self-development. This shows that the fourth private hypothesis can also be considered proved.

As a result of many years of large-scale experimental training on the basis of educational technology to design new opportunities, it was found that one of the main practical results is a change in learning motivation from negative to positive and continuous growth in interest in learning. The example of the experimental study presented in Section 5 shows that not only the educational motivation of students follows the established pattern, but also the motivation of the teacher who has passed the corresponding system of introduction into

the experimental training changes in accordance with the discovered pattern. This means that the fifth private hypothesis can also be considered proven.

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CONCLUSION

The conducted experimental study showed the following.

1.   The results of the analysis of modern perceptions of mechanisms of individual development have led to the conclusion that mechanisms of self-development can be developed only on a new methodological basis. As a result of the methodological analysis it was revealed that the attitude to the social and cultural nature of a person allows to realize only one private model of development - "horizontal" or functional development (formation). Accordingly, within the framework of this methodology, the mechanisms of "horizontal" development will always represent the mechanisms of socio-cultural adaptation of a person into the existing actual socio-cultural environment. In modern psychology, such mechanisms are the mechanism of causal mediation and the mechanism of symbolic mediation, providing, in the first case, the processes of inductive appropriation of ideal forms, and in the second case - the processes of deductive appropriation of ideal forms.

2.   As a result of the analysis of inductive ("external causes through internal conditions"; "internal from internal") and deductive ("internal from external") methods as psychological categories and ways of organizing the educational process of assigning ideal forms, the main provisions were formulated creatively -experimental method as a method of producing ideal forms. These provisions include: a person has a historical (universal) nature; society and culture are a product of human intersubjectivity; man is a historical being, through his activity producing the history of nature, society, culture and himself; qualitative self-change of a person occurs as a result of his constructive activity, which is a way of human production of new ideal forms; self-development is a substantial way of human existence, which is a transition from one of its historical forms to another due to its own creative (constructive-producing) activity; the mechanism of such a historical transition is the unity of historical and creative reflection.

3.   The creative-experimental method served as a methodological basis for the creation of a model of creative mediating mechanism based on the idea of historical human nature. Unlike causal and sign mediation, creative mediation is a mechanism for producing ideal forms as a means of quality self-development.

4.   The model of the mechanism of creative intermediary has served as a

theoretical and methodological basis for the development of the structure and logic of the construction activity, which is a process of transformation of the structure of the subject activity of the previous historical type into the structure of the subject activity of a new historical type, i.e. the process of self-development.

5. The logic of unfolding the structure of constructing activity served as a theoretical basis for the development of educational technology for the organization of students' self-development (technology of constructing new opportunities). The technology is a unified system of concrete methods acting as a way of organization of students' constructing activity and which aim is creation (production) of corresponding components (actions) of subject activity of a new historical type. The general scheme of such transition is a sequence of twenty stages (twenty design actions), each of which completes the creation of the corresponding component of the structure of the new historical type of subject activity.

The following sequence of stages is theoretically substantiated: collective formulation of the problem; collective formation of motivation for self-change; collective formation of images of perception of a new subject form; collective construction of a new method of practical action; collective formulation of criteria for comparing quantities of a new subject form; collective formulation of the definition of the concept of "goal"; collective formulation of ways to control and evaluate future practical results; collective formulation of evaluation criteria for future practical results; joint creation (selection) of means for practical solution of the problem; joint formulation of educational and creative subtasks and their distribution among themselves; individual practical solution of subtasks and joint control by results; mutual and joint assessment; collective creation (selection) of a standard of the result of a practical decision; joint analysis of a new task; collective formulation of a new task; individual assessment of joint activities; individual creation of means and methods of solving a new problem; individual creation of etalon for solving a new practical problem; individual analysis of a new task; individual implementation of the structure of subject activity and the structure of creative activity.

6. The practical application of the educational technology of self-development allowed to solve two most important problems that have not found their final solution in the theory of developing learning. The first problem is naturalization of a sign as a subject of attribution. The essence of

the theory of developing learning is the assignment of abstract (meaning) as a result of its interiorization. In a real educational situation, the ideal form as an assignable pattern of action is presented in the form of its subject model, i.e. through a direct image of perception. By its nature, perception is a means of fixing a single one. A student, who does not have adequate theoretical means (logic of subject actions; subject concepts), proceeding from the nature of his mental abilities, cannot relate to the presented subject model except for a single subject. Demonstration of an action, direct transmission of values from teacher to students is also not able to solve the problem. In self-development technology, this problem is solved by the fact that values are initially created (produced) by the students themselves. In this case, the subject of the action initially acts as a sign of the subject action, and the problem of its naturalization simply does not arise. The second problem is the transformation of a collaborative form of learning activity into its individual form. This is because the starting point of the theory of developing learning (the theory of learning activity) is the separation of students in the joint work on the actions of the structure of joint activity. This means that in a collaborative activity, each learner only takes one action, coordinating it with the other learners' actions.

This principle of forming a joint structure of activities is the basic cause of the problem. It happens because in reality, when participating in a joint activity, a pupil never performs the whole integral structure of activity. As a result, he or she learns only individual actions, but the ability to link these actions to the whole structure is not formed. In the technology of self-development, this problem is solved due to the fact that the division of students is not by the components of the structure of joint activity (by the performed actions), but by two basic functions of the integral structure of activity. Namely, as the experimental situation represented a situation of ordering the subject space, as far as the division took place on two aspects of the ordering method (the method of comparison): on the aspect of increasing the ordered factor and on the aspect of decreasing the ordered feature. The mastery of each particular aspect of ordering always takes place under the conditions of the implementation of a coherent activity structure. Simply mastering both sides of the method leads to the formation of "flexible" activity structures ("reversible operations", according to J. Piaget).

7.   Empirical results prove that technology of self-development can solve the main problem of school education - the problem of learning motivation. One of the main psychological results of the experimental study is the positive dynamics of learning motivation throughout the whole experimental learning.

This result is especially important against the background of the negative dynamics of learning motivation, which is the most characteristic feature of the modern system of broadcast education.

8. Practical application of the self-development technology allowed to solve the problem of systematization and "theoreticality" of knowledge mastered by students. We managed to show experimentally that the technology is capable of ensuring successful mastering by all children of the knowledge that in the real practice of classical school education is not easily and formally mastered. This is especially true for such knowledge, the essence of which is a genetically derived subject relationship. Such knowledge includes the notion of concentration, proportions, discrete models of substance consisting of different "sorts" of molecules, the notion of "geometrical form", etc.

Prospects for research. The idea of organizing a long-term experimental research was to create theoretical, methodological, and empirical foundations for the model of the system of creative education, which could overcome the problems of translating education [296] [297] [298] [299]. As such a model, creative education can give an impulse to reforming the system of education and training. Creative education will give an opportunity to bring up new generations, not so much those who are able to reproduce the experience of past generations, as those who are able to produce (create) such experience. The main thing that a system of creative education should be able to do is to bring up people capable of producing new experiences (new knowledge; new means; new meanings and meanings) and making them a social asset in problematic situations. The results of the experimental research provide an opportunity to start large-scale practical realization of new principles of creative education. Currently, work is underway to create a system of educational centers, which in the future could become the basis for the creation of a full-scale model that would allow to get a result that is inaccessible to the system of broadcasting education, based on already outmoded and unpromising principles of broadcasting and appropriation of the past social experience.

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