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Development and Learning in the Context of Social Interactions: L. Vygotsky vs J. Piaget

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The article is devoted to the problem of contemporary didactics, touching upon the issue of the structure, transmission and acquisition of knowledge.The focus is on understanding the correlation between the content of knowledge and the way it is translated (transmitted) from one person to another, from an adult to a child. We analyze the initial, joint-distributed form of activity that is specific for efficient teaching of children.

Keywords: development, learning, social interactions, socio-cognitive conflict, emotional and semantic conflict, community ("obschnost"), understanding, mutual understanding, reflection, way of interaction, thinking, perezhivanie.

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Развитие и обучение в контексте социальных взаимодействий: Л. Выготский vs Ж. Пиаже

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Статья посвящена проблеме современной дидактики, затрагивающей вопрос строения, передачи и приобретения знания. Основное внимание направлено на то, чтобы понять, в каком соотношении находятся содержание знания и способ его трансляции (передачи) от одного к другому, от взрослого к ребенку. Обсуждается исходная, совместно-распределенная форма деятельности, специфической для эффектного обучения детей.

Ключевые слова: развитие, обучение, социальные взаимодействия, социокогнитивный конфликт, эмоционально-смысловой конфликт, общность, понимание, взаимопонимание, рефлексия, способ взаимодействия, мышление, переживание.

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Our discussion is devoted to the problem of modern didactics, which addresses the issue of the structure, transmission and acquisition of knowledge in essence. The main focus of the discussion is to understand the relationship between the content of knowledge and the form of its translation (transmission) from one to another, in our case, from adult to child. Until this question becomes the subject of special consideration, we will create models and samples of "didactic units" without touching the essence of

the problem of development in learning, reduce the essence of the problem to the transfer or even "transplantation" of knowledge from adult to child, substituting the processes of development with the accumulation of this or that learning material.

Analyzing the correlation between the content of knowledge and the form of its mastering, it is worthwhile to once again turn to the theoretical views of L.S. Vygotsky and J. Piaget, whose studies allow us not only to approach the problem of development in learning, but also to reveal the essence of this problem to a great extent. As it is known, both J. Piaget and L.S. Vygotsky noted the close connection between child development and the forms of interaction between adults and children, the cooperation of the children themselves, and substantiated the influence of social interactions and socialization on the development of children's thinking.

The approaches of the two outstanding scientists are fundamentally different from each other. The researchers lived and acted in different sociocultural contexts, and posed and solved the problem of the development of thinking on different scientific bases. They created two fundamentally different methods of the research of thinking, substantiated different, in essence, concepts of learning, and fundamentally differently defined the school as a social institution of child development. A comparative analysis of J. Piaget's and L.S. Vygotsky's approaches to the problem of research of development in the context of social interactions allows us to better understand their role in children's development in learning, and, as a result, to come closer to the issues of modern didactics, which will determine the essence of a new school, a school that "must teach to think" (E.V. Ilyenkov).

J. Piaget and L.S. Vygotsky in Modern Studies

The methods of J. Piaget and L. Vygotsky, aimed at studying the processes of child development, nowadays not only do not lose their relevance, but also attract, more and more, the attention of modern researchers. Thus, the analysis of the dynamics of citation by foreign researchers of the works of L.S. Vygotsky and J. Piaget from 1996 to 2015, according to Google Scholar[1], shows a steady tendency towards the increase in citations devoted to the problem of learning and development (Fig. 1—2).

Moreover, the high level of citations of such works by J. Piaget as "The Moral Judgment of the Child" and "The Psychology of Intelligence", and L.S. Vygotsky's "The History of the Development of Higher Mental Functions" and "Thinking and Speech" indicate that the substantiation of the forms of the origin of children's thinking (operational structures of intellect for Piaget or scientific concepts for L.S. Vygotsky) is still a central problem of developmental psychology today (Fig. 3—4).

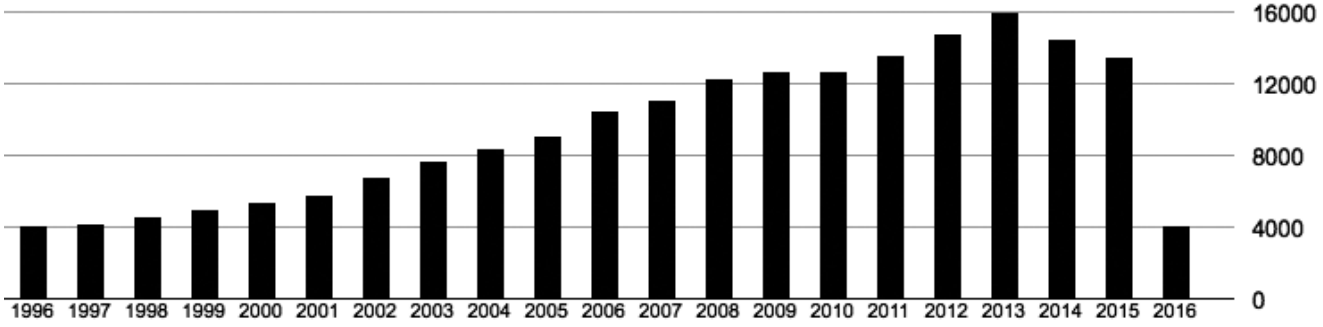

Fig. 1. Steady Increase in Citations of J. Piaget's Works, Reflecting the Interest of Modern Researchers in the Problem of the Development of Thinking

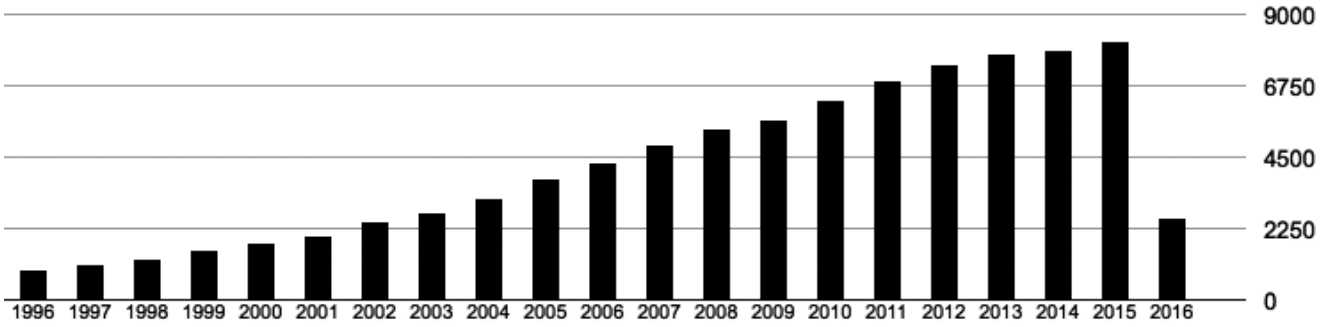

Fig. 1. Steady Increase in Citations of L.S. Vygotsky's Works, Reflecting the Interest of Modern Researchers in the Problem of the Development of Thinking and Learning

[1] Data from the Google Scholar version is cited in the report by A.H. Perret-Clermont, which was read at the anniversary conference dedicated to the 120th anniversary of the birth of L.S. Vygotsky [13].

Fig. 3. The Most Cited Works of J. Piaget

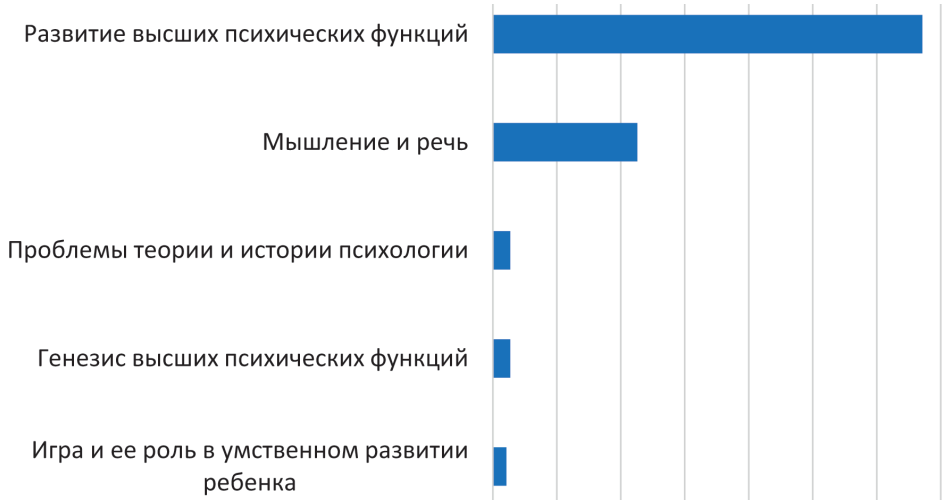

Fig. 4. The Most Cited Works of L.S. Vygotsky

The Key Provisions of the Theory of J. Piaget[2]

The formation of intelligence for the scientific school of J. Piaget is the core line in the child's mental development, on which all other mental processes depend. According to J. Piaget, the qualitative originality of the development of intelligence at each age, the jumps and transitions from one age stage to another are determined by the *lifetime formation of* intellectual activity structures specific to each age.

The basic idea of development in Piaget's theory is that intellectual operations are realized in the form of holistic structures. These structures are formed due to the equilibrium to which the overall development of intelligence tends towards. The Geneva school of genetic psychology, created by J. Piaget and his followers, studies the mental development of the child, and in fact, the origin of intelligence. A special study of children's understanding of natural phenomena, a description of what the features of children's logic are, and, as a result, the justification of the mechanisms of cognitive activity in general can be considered its main task. The fundamental answers that we find in Piaget's works regarding the development of operational structures of children's thinking constitute the core of the Geneva school of science.

The key provisions of Piaget's theory can be summarized as follows. Piaget's theory can be generally expressed with the help of four axioms [16].

1. Intelligence is built on the basis of action.
2. Action is the source of development.
3. Thought is a compressed form of action.
4. Cognition at all genetic levels is a product of real actions performed by the subject with objects.

Justifying these positions, Piaget proceeds from the fact that the object(s) exists independently of the subject. In order to cognize objects, the subject must act with them: connect, divide, move, change, combine, i.e. transform them. Development is realized on the basis of

[2] A detailed analysis of the main provisions of J. Piaget's theory was carried out by L.F. Obukhova [see, for example: 10; 11 and others].

real actions performed by the subject with the objects of the external world. At the same time, the description of the subject-object interaction cannot be fully reflected by the formula: "S→R" (unidirectional arrow). The formula fixing the reciprocity of the "S↔R" relation (reversible arrow) corresponds more fully, from Piaget's point of view, to the essence of subject-object interactions.

The reversible nature and content of subject-object interactions reflect Piaget's ideas of transformation and construction. Thus, the idea of *transformation* captures the fact that the boundary between subject and object is not established from the very beginning, and, in every action, the subject and object are mixed. The *idea of construction* assumes that objective knowledge is always subject to certain structures of action. And the structures of action are not given either in the objects, since they depend on actions, or in the subject, since the subject must learn to coordinate its actions.

The most general thing that is preserved in action at a certain level of development is characterized by the *schema of action*, which, according to Piaget, is the structure at a certain level of mental development, and in the narrow sense — the sensorimotor element of the concept. Based on the concept of the scheme of action, Piaget introduces a fundamental distinction between the form and content of cognition. In his theory, the content of children's cognition is what is acquired through experience and observation; the form of cognition is the "general scheme" of the subject's cognitive activity, which includes the subject's interactions with objects. It is not the object as such that plays the main role in the process of cognition: the subject himself chooses the object depending on the level of development of mental structures. And the cognition of reality depends on how developed the mental structures are.

J. Piaget describes three main forms of experience that determine the development of intellectual structures [17].

— *Experience-exercise*, which is important for skill formation.

— *Physical experience*, thanks to which the child, acting with objects, begins to distinguish the physical properties of objects (shape, weight, volume, area, etc.).

— *Logico-mathematical experience, which the child derives from the actions with objects*. It is characterized by an orientation not only to the achievement of a pragmatic result, but also to the method of action itself, which is a necessary condition for the development of intelligence. It is the logical-mathematical experience that is decisive for the development of intelligence, that characterizes a higher level of mental development.

The Law of Mental Development in the Theory of J. Piaget

The main achievement of J. Piaget is the discovery of egocentrism of children's thinking. According to Piaget, *egocentrism* is the main feature of thinking, a hidden mental position that reflects the originality of children's logic, children's speech, children's ideas about the world. In numerous studies of the scientific school of J. Piaget, egocentrism is defined as a kind of systematic and unconscious illusion of cognition, a form of initial centration of the mind that characterizes mental activity in its origins. Egocentrism points to the fact that the external world does not directly impact the subject's mind, and our knowledge of the world is not a copy or representation of external events.

The basic law of mental development in the theory of J. Piaget's theory is the law of *decentration*, the law of transition from general egocentricity to intellectual decentration, which is expressed in the child's transition from egocentrism to an objective position in the cognition of things, other people and himself. Moreover, the key position defining the essence of the formulated law is that, according to J. Piaget, the basis of the transition from the egocentric to the objective position is the process of socialization, i.e. the transition from individual and subjective to social. Piaget believes that thought is formed on the basis of action, but the source of integral logical structures (the development of individual intelligence) should be sought in the socialization of an individual [15—16].

Socialization, in Piaget's theory, is a process of adaptation to the social environment, which consists in the fact that the child, having reached a certain level of intellectual development, becomes capable of cooperating with other people by dividing and coordinating his or her point of view and the points of view of other people.

At the same time, *social life*, as it is understood by J. Piaget, begins to play a progressive role in the development of the mind only at those stages when cooperative relations, disputes and discussions between children of the same age are formed. Such a turning point in development comes around 7-8 years of age. Until this age, the leading role in the child's development is played by his relations with adults, which, as J. Piaget emphasizes, are built mainly on the basis of one-sided respect and the authority of the adult.

According to Piaget, "...in the pre-operational stages, the structures characteristic of incipient thinking precludes the formation of cooperative social relations that could entail the constitution of logic. Moving within the space between deforming egocentrism and a passive acceptance of intellectual coercion, the child is not yet an object of intellectual socialization capable of profoundly altering the mechanism of this process.

Therefore, it is at the level of the formation of concrete operations that the problem of the correlation between the influence of social exchange and individual structures on the development of thinking becomes severe" (highlighted by me. — *V.R.)* [25, p. 173,].

Revealing the content of the socialization process, Piaget points to the fact that, in the process of interactions with adults and peers, children at the age of 7—8 years have a *socio-cognitive conflict*, when the point of view of others becomes significant and must be taken into account when performing their own actions. The other's point of view is correlated with one's own position, it is taken into account and included in the process

of building an action, is fixed in the emerging schema of action, and becomes a condition for the development of emerging groupings (Fig. 5).

At the same time, in Piaget's theory, the isomorphism of operational structures and structures of cooperation is considered as a consequence of a more general law of grouping development. For each grouping internal to an individual is, according to Piaget, a system of operations carried out jointly, i.e., in the proper sense of cooperation. This form of equilibrium is not the result of single intellectual thinking, nor is it a social product. According to Piaget, internal operationalization and external cooperation are only two additional aspects of the same totality and the equilibrium of one depends on the equilibrium of the other.

Intellectual Development in the Context of Social Interactions in Piaget's Theory

The analysis allows us to formulate the principles of intellectual development in J. Piaget's theory, while emphasizing the special role of social interactions in this process. Thus, according to J. Piaget:

1) The basis of human intellectual development (development of thinking) is a qualitative change in the forms of experience based on the performance of one's own actions;

2) The means of performing individual actions in the conditions of S ⇆ O interactions are forming constructs ("knowledge" about the object and action structures subordinated to them);

3) Invariants of action (reflected experience) are formalized into action schemas (an action scheme is a structure at a certain level of mental development, a mental system or an integrity, the principles of the activity of which differ from the principles of the activity of the parts);

4) Cooperation (collaboration) allows for the correct transfer of a concept, starting from the level of specific operations. The condition for such a transfer is socio-cognitive conflict — a new type of relations between subjects, replacing the relations of prestige and authority that characterize the pre-operational level of intelligence development;

5) Socialization of individual intellect (transition from individual and subjective to social) — the main direction of intellectual development. Socialization is impossible without cooperation and collaboration, without the inclusion of individuals in the actions of different communities.

Conventionally, the scheme of the socialization of individual intelligence, as it is presented in Piaget's theory, is shown in Fig. 6.

It is noteworthy that recent studies carried out within the framework of Piaget's scientific school problematize the Swiss scientist's point of view on the isomorphism of operational structures and cooperation structures. Thus, recently, in the works of researchers of this scientific school, the question has become more and more distinct whether social interaction arises from some form of assistance that would precede cooperation, and influence the development of thinking, and whether it ("co-action") is the source of both social and cognitive development, the determining condition of which it could be?

Recognizing this position would mean that the social environment acts on the child's development from birth. Moreover, the data from recent years allows researchers to say with increasing responsibility that the social factor plays a leading role in the emergence of the child's ability to act consciously, to distinguish communicative actions as special forms of social interactions.

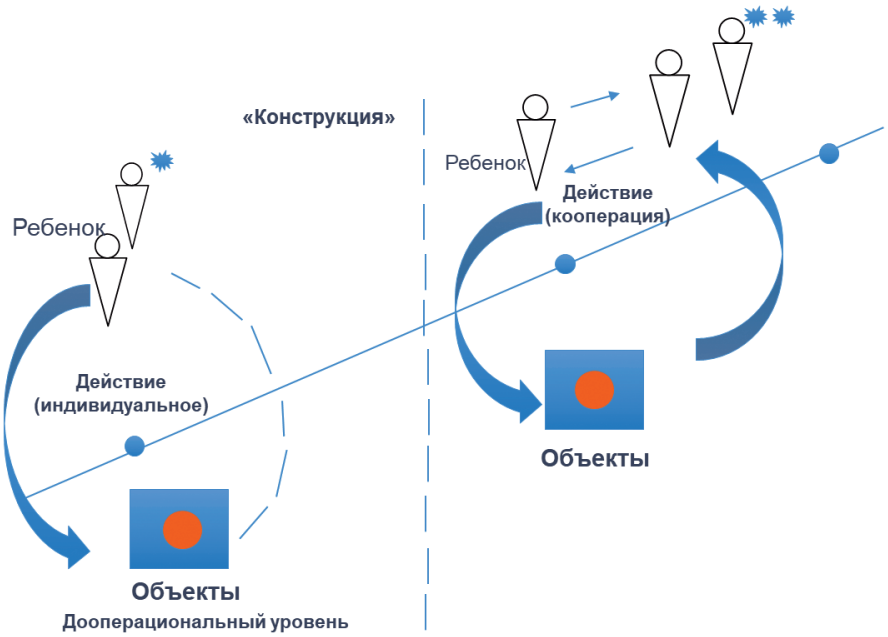

Fig. 5. Socio-Cognitive Conflict as a Mechanism for the Development of Individual Intelligence Under Conditions of Cooperation (in J. Piaget's Theory)

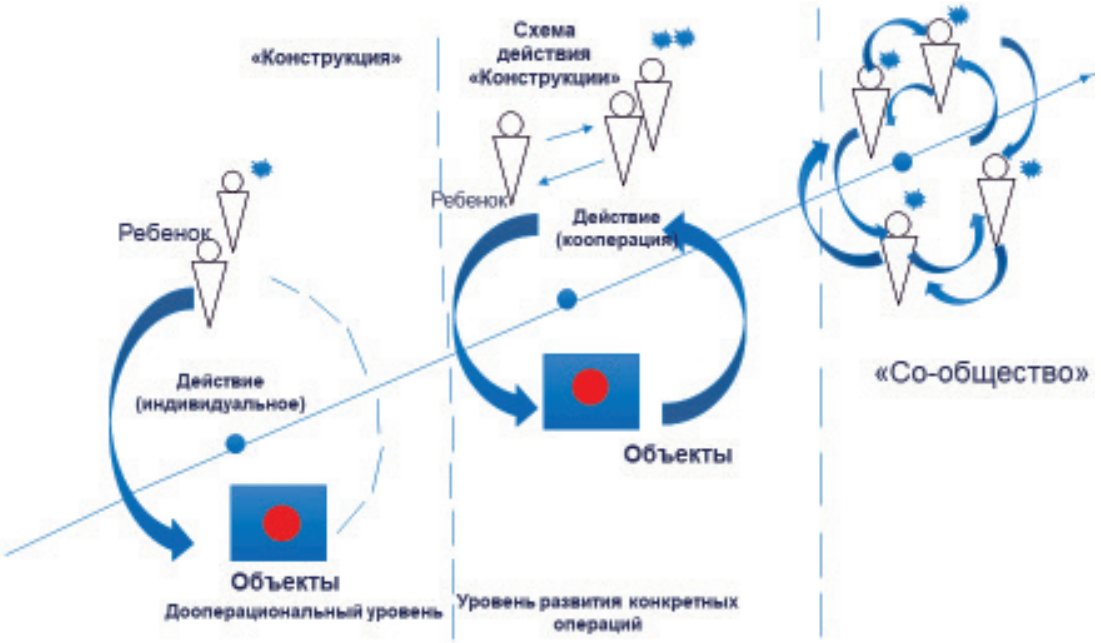

Fig. 6. Socialization of Individual Intelligence (in Piaget's Theory)

Thus, data from a number of studies of communicative interactions at an early age indicates that "...just as the child's visual familiarity with the details of the environment arises within innate orienting movements, the smile manifests itself as a specific element of its innate communicative activity. Mothers are sensitive to the totality of a child's communicative actions, not to a single smile: but even when a child cannot make a smile recognizable, his mother is able to see his sociability" [29, c. 452]. These types of statements can be seen more and more often in the works of the followers of the scientific school of J. Piaget [27; 29—30].

The Role of Social Interactions in the Development of Children's Thinking in the Scientific School of L.S. Vygotsky. The Law of the Development of Higher Mental Functions

It is obvious, however, that the issue of the biplanarity (isomorphism) of intellectual structures and cooperation structures will remain open unless the approach towards the problem of development is fundamentally revised. The foundations of such an approach are laid in the scientific school of L.S. Vygotsky.

As is known, the scientist considered social interactions and social relations as the initial basis (source) of development. "Behind all the higher functions and their relations," wrote L.S. Vygotsky, "there are genetically social relations, real relations, homo duplex (a dual person — *Latin*). Hence the principle and method of personification in the study of cultural development, that is, the division of functions between people, the personification of functions. *For example, voluntary attention: one masters, the other possesses. Dividing again in two what is merged in one, the experimental deployment of the higher process (voluntary attention) into a small drama*" (highlighted by me. — *V.R.*) [5, p. 1023].

This conclusion was made by L.S. Vygotsky on the basis of the results of widely known experiments on the mastery of attention with children (Fig. 7). An adult placed two cups covered with lids in front of a child. In one of them the adult placed (hid) a nut. The lids were painted in different colors (dark gray or light gray). The darker-colored lid covered the cup where the nut was located at the moment. Depending on the location of the nut, the ratio of colors on the lids changed. The adult's intention was to draw the child's attention to the correspondence between the location of the object (nut) and the corresponding sign (light gray/dark gray). The adult's attention, represented through the correlation of object and sign structures, had to be mastered by the child himself. This was achieved through the mediation of object and sign structures on the basis of unfolding interactions and relationships between the adult and the child.

L.S. Vygotsky formulated the process of mastering a function as a social situation initially distributed between participants as a well-known law of development of higher mental functions, according to which "...any function in the cultural development of the child appears twice, in two planes, first social, then psychological, first between people as an interpsychic category, then within the child as an intrapsychic category" [2, p. 145].

The idea of mastering the function as initially divided between an adult and a child was most thoroughly realized on the basis of the method of double stimulation, developed by L.S. Vygotsky and L.S. Sakharov, which is the prototype of the genetic modeling approach to the study of development created by L.S. Vygotsky. The specific method made it possible to study, in experimental conditions, the process of concept formation as a process of the acquisition of meaning by a meaningless

word, the transformation of the word into a symbol, into a representative of an object or a group of similar objects [see: 3—4, etc.].

For L.S. Vygotsky it was important to show that the formation of a concept or the acquisition of meaning by a word is the result of a complex active joint activity of an adult and a child (operating a word or a sign), in which all the main intellectual functions participate in a peculiar combination. Individual consciousness is, at the same time, the product of the interiorization of this activity.

"The transition [from interpsychic to intrapsychic functions, i.e., from the forms of the child's social collective activity to his individual functions. — *V.R.*] is a general law ... for the development of all higher mental functions, which arise initially as forms of cooperative activity and are only later transferred by the child into the sphere of his psychological forms of activity.

"*Not gradual socialization brought into the child from the outside, but gradual individualization, arising on the basis of the child's inner sociality, is the main tract of child development"* (highlighted by me. — *V.R.*) [1, pp. 343—344].

Learning and Development in the Context of Social Interactions: Problems Posed by L.S. Vygotsky

The stages of the emergence of individual consciousness from the forms of collective and social activity, pointed out by L.S. Vygotsky, are accurately described by V.V. Davydov (Fig. 8). The individualization of consciousness, in V.V. Davydov's interpretation, is a culturally significant result of mastering initially collective and social forms of activity. In this case, signs and symbols act as necessary cultural means of organizing individual human consciousness.

Analyzing L.S. Vygotsky's approach to the role of social interactions in human development, V.V. Davydov

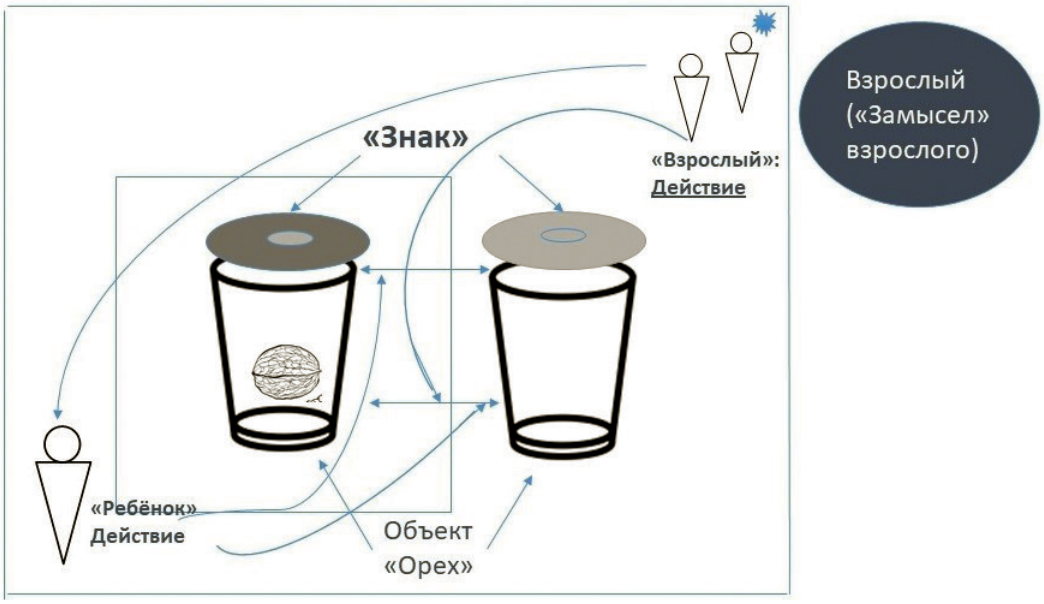

Fig. 7. Scheme of Acquiring Attention in the Situation of the "Child-Adult" Interaction in L.S. Vygotsky's Experiments

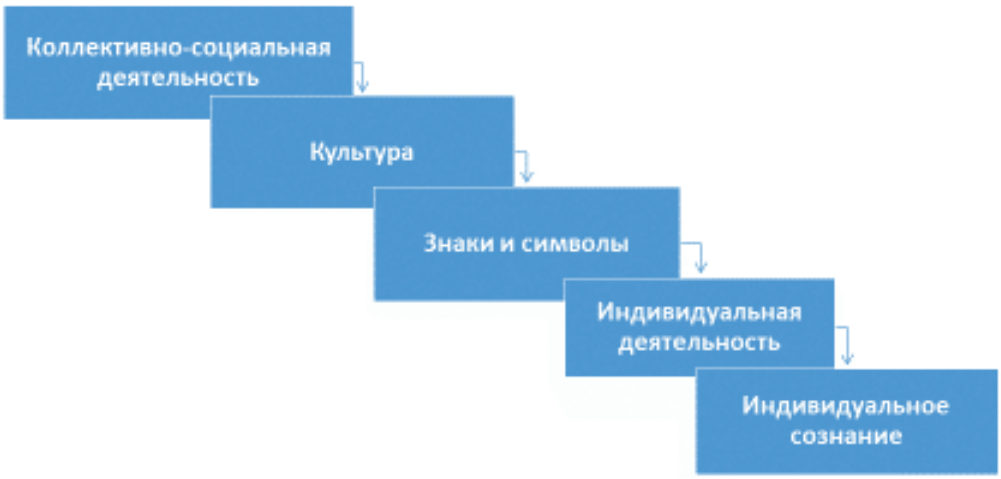

*Fig. 8.*Stages of Emergence of Individual Consciousness from the Forms of Collective and Social Activity (according to V.V. Davydov)

outlined six main problems that are posed in the scientific school of L.S. Vygotsky and the development of which will allow for a deeper understanding of the nature of the development of higher mental functions [8].

Thus, according to V. V. Davydov:

1) The basis of human mental development is a *qualitative change in the social situation* or, in A.A. Leontiev's terms, a *change in human activity*;

2) The universal moments of human mental development are his education and upbringing, because, according to L.S. Vygotsky, "learning is valuable when it goes ahead of development";

3) The initial form of activity is its unfolded fulfillment by a person in an external, social or collective plan;

4) New psychological formations arising in a person are derived from the interiorization of the initial form of his activity;

5) Various sign and symbolic systems play an essential role in the process of interiorization;

6) Intellect and emotions, which are in internal unity, play an important role in human activity and consciousness.

Socio-Genetic Method of Research of Development in Learning

Provisions that form the basis of the cultural-historical scientific school of L.S. Vygotsky and that are outlined by V.V. Davydov, allow us to take a new look at the study of the mechanisms of the development of thinking, to connect these mechanisms with qualitative changes in the social situation caused by the development of forms of collective and cooperative activity. When designing this type of situations, it is important to take into account the following.

1. It is impossible to limit ourselves to the study of social interactions and the process of mastering concepts as parallel processes.

2. The method of the experimental research of the process of concept formation should be *socio-genetic* (compare with the *"genetic modeling method" of L.S. Vygotsky*). The basis of this method is the principle of the intermediation of subject structures and structures of joint activity: the subject content of the object, which determines the content of the concepts being mastered, is mediated by the ways of interaction of the participants of the social situation.

3. Organization of interactions between adults and children, the children themselves is a necessary condition for performing joint actions, since it is the interactions and relationships of the participants themselves that determine their understanding of the connection between various actions with the object, the properties of its structure and the corresponding concepts.

4. The way of joint actions, corresponding to the system of concepts being mastered, characterizes the main didactic unit that determines the requirements for the organization of the social situation.

5. It is necessary to specifically investigate and design social situations based on mediating the subject content of the object by the ways of the interaction of its participants, to analyze the child-adult communities and joint forms of activity arising in these conditions, considering them as the initial forms of the origin and development of emotional and semantic, and sign and semantic structures that determine the processes of mastering the system of concepts.

Note that the socio-genetic method is based on V.V. Davydov's theory [7]. It meets the requirements formulated by us, according to which the relationships and interactions of the participants in a social situation determine the conditions for the development of child-adult communities and the corresponding forms of joint activity [21; 28]. Numerous studies carried out in accordance with this method are presented in the system of methods, thanks to which new data was obtained on the influence of social interactions between adults and children, the children themselves on the development of children's thinking, the influence of relationships on the success of learning was proved [see: 6; 19; 20; 24, etc.]. It has been established, in particular, that the emerging child-adult communities characterize:

— distribution of initial actions and operations (determined by a group of transformations that ensure that participants search for a common way of constructing the object under study);

— exchange of ways of action (determined by the need to include individual actions in new ways of interaction);

— communication, without which the distribution, the exchange of actions and the understanding by participants of the limitations of their actions are impossible, and thanks to which the participants plan adequately to the conditions of the task of the activity and search for joint ways of action;

— mutual understanding, which is conditioned by the necessity to include the individual ways of action of participants in joint activity (allows to establish the ratio of possibilities of one's own action and the actions of other participants of activity);

— reflection, on the basis of which the participant's attitude to his/her own action (limitations and opportunities) is established, the boundaries of the transformation of this action are determined, and the search for new forms of interaction and cooperation is initiated (modeled).

Moreover, the results of recent studies, obtained by applying the developed method, confirmed the fact that the relationship between *communication*, *mutual understanding* and *ways of interaction* can be considered as an integral indicator of children's inclusion in a joint way of problem solving and, accordingly, as a meaningful characteristic of the emerging community, which defines a new framework of opportunities for the development of children's higher mental functions [22; 28]. The table reflects the peculiarities of the four types of child-adult communities identified in the process of analyzing the results of the study.

The analysis of the data we have presented allows us to conclude that the main difference between the community, which means that children are included in

the process of joint problem solving, and other possible forms of uniting the participants lies in their orientation towards the method of interaction itself. The features of such an orientation are manifested in the children's targeted search for a joint solution: in assessing the limitations of *their own* and *other* actions, in mutually talking through and by the symbolic representation (designation) of the scenarios of possible interactions that can be effective for problem solving, and in the subsequent modeling (playing) of such interactions.

The obtained data once again confirms the position that social interactions determine the mechanism of the separation of functions, on the one hand, and the way of mastering them, on the other. This means that the social interactions and social relationships of the participants, which initially serve as necessary conditions for the social realization of the thinking and communication processes, later begin to fulfill the role of the cognitive function of the self-regulation and mental representation of this or that information. These interactions activate as yet undeveloped cognitive functions, enabling children to act at a higher cognitive level.

Fig. 9 shows the scheme of social interactions between an adult and a child, which contribute to the emergence of a special emotional and semantic conflict between the participants, determining the change of the social situation due to the emergence of new motives and goals of activity. This type of interaction indicates the fundamentally different conditions of the origin of thought than the socio-cognitive conflict described in J. Piaget's theory, as well as the inherently social nature of the development of higher mental functions.

The data we have obtained allows us to discuss the question of the sources of development based on emotional and semantic conflict. First of all, there is reason to believe that the change in the subject of the task arising in the conditions of social interactions creates prerequisites for the change in the subject of action. This change is connected with the emergence of a fundamentally new task for children to search for the mode of action itself. The necessity of its solution triggers a new motivation that encourages children to organize joint actions and to search for a solution together. Following this motivation, participants discuss the emerging constraints and design the necessary exchanges, strengthening communication and modeling the ways of possible interactions.

Under these conditions, a common *emotional and semantic field* is formed, *based on the participants' experience of new possibilities and understanding of the meanings of their actions*. The role of emerging experiences in the development of activity, as it is known, was specifically noted by A.N. Leontiev, who wrote: "These forms of experience are forms of reflection of the subject's attitude to the motive <...> This realized relation of the subject of action to its motive is the meaning of action; the form of experience (consciousness) of the meaning of action is

Table

Types of Children's Communities Arising in the Conditions of the Joint Solution of Educational Problems (by the Example of Solving a Class of Problems on the Equality of Moments of Forces)

Type of Community (Modes of Interaction)	Processes of Communication and Mutual Understanding that Characterize the Joint Search for a Way to Solve a Problem
1. *Pre-cooperative* There is no interaction between participants. Children are not included in the joint search for a way to solve the problem	Processes of communication and the exchange of actions aimed at finding a joint way of solving the problem do not occur. There is no mutual understanding
2. *Pseudo-cooperative* Interaction between participants is substituted by the action of one of the participants. In some cases, the problem is solved by one of the participants (individually)	Communication between participants does not affect the content of the problem. There is no understanding of the possibilities of the other participant's action and exchange of actions, which determine the search for a joint solution.
3. *Cooperative (organizational)* The resulting joint action relies on the interaction of the participants based on simple cooperation in the operations performed. Children search for a solution to a problem in reliance on the possibilities of individual actions without analyzing the method of interaction itself. The problem is solved	Participants' mutual understanding of individual action possibilities and the exchange of actions are conditioned by the search for a joint way of solving the problem. At the same time, communication is not oriented towards the search for a joint solution. Analyzing the way of interaction does not become the goal of joint action. It is important for the participants to solve the problem, but not to understand how to organize interaction for the correct solution
4. *Meta-cooperative (reflective-analytical)* The subject of special analysis of participants is the mode of interaction itself, which makes its transformation and correct problem solving possible. Based on the inclusion of individual actions in the joint action and the exchange of actions, the problem is solved	Communication is aimed at discussing the possibilities of including individual actions in the joint action. The search for the correct solution of the problem is transformed for the participants into a task of the interaction and determination of a joint method of solution. Mutual understanding is mediated by the search for a way of interaction based on understanding the possibilities of individual actions in joint action. The inclusion of individual actions in joint action becomes the main goal of interaction. The preconditions for new relationships are created, and as a result — for the emergence of a new, in terms of goals and objectives, social situation.

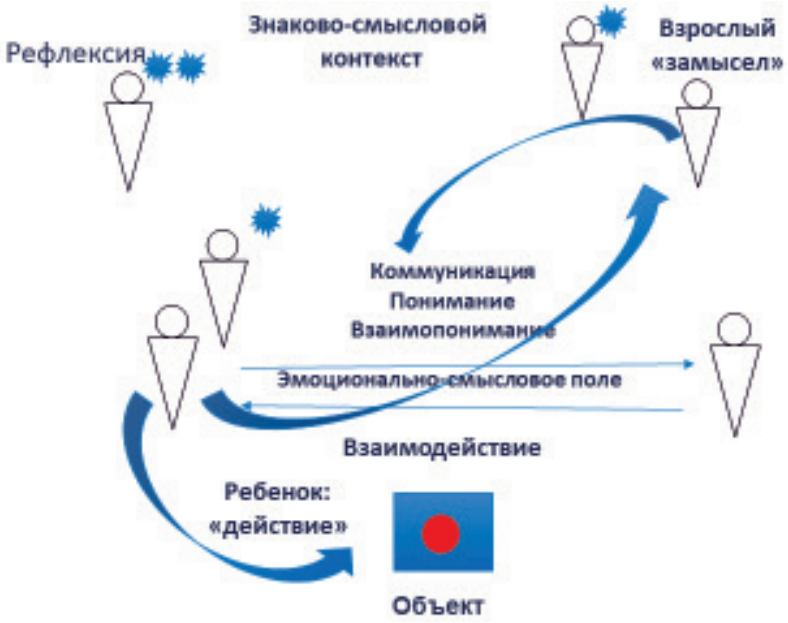

Fig. 9. Emotional and Semantic Conflict as a Mechanism of the Change of Social Situation

the consciousness of its purpose ... A change in the meaning of action is always a change in its motivation" [9, p. 48—49]. Our research has shown that activity in social situations created on the basis of emotional and semantic conflict unfolds due to new meanings and attitudes to the performance of their own actions and actions of other participants through the experience of these meanings, their understanding and mutual understanding. With the emergence of a new motivation for the child, other opportunities arise and, consequently, other boundaries for individual actions, thanks to which children tend to plan scenarios for solving problems, make meaningful agreements among themselves about real interactions, and design new ways of working together.

The obtained data allows us to consider the role of social interactions and social relationships in children's development in learning, to discuss the problem of designing an educational space as a space of developing child-adult communities, and, in fact, to redefine the requirements for a modern school [see, for example: 23].

A School That Must Teach to Think: Vygotsky's school ∞ Piaget's school

In general, the analysis of the problem of learning and development in the context of social interactions, presented in the two major scientific theories of L.S. Vygotsky and J. Piaget, allows us to discuss the issue of the modern school as a developmental school in the most general way. The reason for such a discussion are the views of the two outstanding scientists on the sources and mechanisms of human development, in particular, the notion that actions with objects and social interactions are interrelated, and that the effective transfer of knowledge and concepts is mediated by forms of joint-collective activity. It is legitimate to speak of both similarities and differences in the respective approaches. Piaget's school of action and the space of mastering various forms of experience is an alternative to L.S. Vygotsky's school based on the developing forms of child-adult communities and activities. The following lists of characteristics of the two schools reflect this difference in general terms.

1. *A school that "teaches to think" (basic definitions for the Piaget School project).*

— A school of action (a space for active transformation and construction).

— A school of mastering different forms of experience (exercise — physical experience — logical and mathematical experience).

— A school of intellectual development (forms of thinking activity), which ensures the process of decentration of children's thinking and the formation of intellectual structures (schemes/models/groupings).

— A school of cooperation, based on role exchange, cooperation and collaboration in solving problems and tasks (starting from the level of concrete operations).

2. A *school that "teaches to think" (basic definitions for the Vygotsky School project).*

— A school based on developing forms of child-adult communities and activities.

— A school for the realization of age-related opportunities and the development of motivation ("school of ages").

— A school based on the modern (cultural) means of organizing communication and activity (object and content environment, "smart digital environment", etc.).

— A school for the development of abilities:

— To interact and cooperate;

— For communication and understanding (mutual understanding).

— A school that ensures the development of reflexive forms of consciousness (from social-collective to

individual through the formation of sign and semantic contexts).

The requirements to the models of the two types of schools presented in the most general form, based on the scientific provisions of the two leading theories of human development, should be taken into account when designing modern educational spaces and creating an effective means of organizing the joint activities of children and adults that promote children's development in learning.

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