



## LEV VYGOTSKY'S CULTURAL-HISTORICAL THEORY OF DEVELOPMENT AND THE PROBLEM OF MENTAL TOOLS

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*El artículo pretende describir los enfoques para comprender las formas de mediación utilizadas en programas educacionales para niños preescolares, como una de las principales líneas de aplicación psicológica en Rusia. En gran medida, se basan en el enfoque cultural-histórico, desarrollado por Lev Vygotsky y sus seguidores. Se muestra cómo se desarrolló y se aplica actualmente la idea de utilizar herramientas mentales en la educación preescolar. De acuerdo con la teoría cultural-histórica, el ejemplo es una de las herramientas culturales, cuyo dominio por el niño tiene lugar en la zona de desarrollo próximo. Otra herramienta cultural es el signo, y especialmente la palabra. Los seguidores de Vygotsky elaboraron tales herramientas como modelos visuales, esquemas, y símbolos. La aplicación de los programas educacionales de herramientas mentales se analizaron en diferentes esferas (desarrollo del lenguaje, desarrollo cognitivo, y desarrollo volitivo), como ejemplos de los programas educacionales más extendidos en Rusia.*

**Palabras clave:** Herramientas mentales, Herramientas culturales, Zona de desarrollo próximo, Mediación, Iniciativa infantil.

*The article is aimed at describing approaches towards understanding of mediation forms used in educational programs for preschool children as one of the major lines of psychology implementation in Russia. To a large extent, they are based on the cultural-historical approach, developed by Lev Vygotsky and his followers. It is shown how idea of mental tools usage in preschool education evolved and has developed nowadays. According to the cultural-historical theory sample is one of the cultural tools, mastering of which by the child occurs in the zone of proximal development. Another cultural tool is a sign, and especially the word. Followers of Vygotsky elaborated such tools as visual models, schemes, symbols. Implementation of mental tools in educational programs is analyzed in different spheres (speech development, cognitive development, voluntariness development) on the examples of the most spread educational programs in Russia.*

**Key words:** Mental tools, Cultural tools, Zone of proximal development, Mediation, Child initiative.

One of the most important areas of psychological science implication in Russia is education, of which preschool education was considered as significant stage. Since 1960, when USSR Institute of Preschool Education was founded, early years education became a task of the governmental level, which was carried out by prominent Soviet and Russian psychologists and educators.

The purpose of this article is to identify approaches towards understanding mediation forms used in educational programs for preschool children in Russia. To a large extent, they are based on the ideas of the outstanding Russian psychologist Lev Vygotsky. There are different interpretations of Vygotsky and his texts, but there are common ideas that are acknowledged in Russia by most psychologists.

He paid much attention to the analysis of child development in the preschool age. Unlike most psychologists of his time, Vygotsky considered mental development as a process of appropriating higher forms of the psyche, which are held by culture and passed on to the child during interaction with the

adult. In this case, it is not a matter of passive transfer of knowledge. Development is understood as a continuous process of self-movement, the emergence of new properties and qualities that were not in existence in previous stages. According to Vygotsky, this process is determined by "the unity of material and mental aspects, the unity of the social and the personal as the child ascends the developmental steps" (1984, p.248).

In his description of development, Vygotsky introduces the concept of a zone of proximal development (ZPD) (Vygotsky, 1978). ZPD becomes clearly visible if we were to compare the individual independent activity of a child and that based on imitating an adult. Vygotsky notes that the results that the child achieves through imitation are much higher than those based on self-activity. Although they transcend far beyond the independent capabilities of children, they do have limitations inherent in each age. Thus, Vygotsky assigns an important role in his theory to the imitative behavior of the child. He understands imitation as not thoughtless mechanical copying but any activity which the child performs in collaboration with an adult or another child rather than all on his own. He emphasizes that the development of all of the child's personal characteristics occurs in the process of cooperation with an adult. In doing so,

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Vygotsky creates a foundation for building developmental learning, i.e. learning focused on ZPD.

The general logic of development, Vygotsky maintains, is associated with the transformation of natural mental functions into higher ones. The development of higher mental functions is ensured in the process of mastering the tools of mental activity:

*It is quite obvious that in explaining the nature of a mental process that leads to the solution of a problem, we must proceed from the goal, however we should not confine ourselves to it alone.*

*The goal ... does not imply the explanation of the process. The main problem related to the process of concept formation and that of expedient activity in general is a problem of tools by which this or that psychic operation is carried out and this or that activity is performed (1982, p.126).*

As can be seen from the above arguments, the tools are, in Vygotsky's view, an essential factor that influences the course of the mental process. Tool turns out to be a very dialectical construct. It indeed possesses opposite properties that are characterized by focusing on the child's involuntary behavior and at the same time by retaining a potential possibility for his voluntary behavior. This manifests Vygotsky's dialectical approach.

Let's consider a sign: it is a tool aimed at organizing human behavior. Therefore, a sign has two aspects - a material shell and a meaning. The general course of development implies that due to the material nature of the sign there is a possibility (to be realized by an adult) of placing this sign in the field of interaction between child and adult. In this case, the sign acts as an element of this field. However, the logic of operating with the sign differs from the natural logic of organizing the field. The sign structures interaction according not to natural laws, but to the laws of culture, which in the end makes the child's mental functions voluntary and conscious.

The sign that, in Vygotsky's view, matters here most is the word. One of the implications of Vygotsky's approach is that all psychological theories of child development can be divided into two groups: the first group - naturalist theories - considers the child development process in a natural way and the second one includes theories that regard mental development not only as a socially conditioned process, but also as a process of mediated development. In this case, it is the adult who acts as a carrier of tools of development and organizes a social situation. Thus, the adult guides development the manifestation of which is learning.

Vygotsky's approach is a great deal more advantageous when compared to the naturalistic views in educational practice. The very idea of developing learning puts the adult in a fundamentally different position: instead of being an outside observer and analyst of the child's development, the adult becomes an organizer and developer of this process. As an example, we can consider the role of the adult in developing children's play. Should a teacher interfere with the children's

play or not? In this case, the authors take quite different positions: some authors (Singer, 2015) believe that children should independently organize their play activity, others (Oers, 2003) maintain that adults are responsible for the development level of preschoolers' play activities and should participate in its organization.

Alexandra Usova was the first to present Vygotsky's ideas in the form of the structured educational program, that was used in former USSR all over the country. Usova considered a child's imitation of an adult as a ZPD. There emerged a model of holding special classes for preschool children, during which a teacher presented a cultural pattern to them and showed how to act:

*A model is required in order to evolve children's thinking activity (through problem-solving patterns), to develop language (through patterns of correct pronunciation, grammar constructions, storytelling, expressiveness), to teach how to draw, mold, design and move. ... Explanation, examples, models are of paramount importance for children's development ... (Usova, 1970, p.36).*

By imitating an adult, children assimilated a model. Subsequently, almost every program for preschool education in Russia began to use this form of organizing children's activity. Usova noted that a model acts as a tool to be assimilated by a child in cooperation with an adult. Thus, two groups of tools were identified: tools by which a child manages his actions, i.e. different types of signs; and models of various forms of activity, which acted as a cultural result.

#### MEDIATION IN THE PROCESS OF SPEECH DEVELOPMENT

Considering the fact that, according to Vygotsky, the word acts as a sign, mastering one's language acquired the context of gaining a command of a meta-tools. Being a meta-tools, language acquisition considered in the process of speech development. All programs for preschool education contained tasks aimed at speech development. After Usova's research, most educators focused their efforts on developing oral speech in preschool children. The work was carried out in two main directions, reflecting the specifics of the development of speech mediation in childhood:

- 1) language acquisition as a means of solving other problems (communicative and cognitive ones);
- 2) acquisition of language structures of different levels through awareness of linguistic phenomena.

The mastery of a language as a sign system requires knowledge of its two aspects - phonetics and semantics: a child should be able to recognize and utilize signs in a proper way. Therefore, the Russian preschool speech development programs traditionally singled out tasks designed to form the phonetic and grammatical correctness of children's speech and its coherence. The most frequently used assignments were those aimed at constructing utterances. In particular, almost all the programs contained tasks



on making utterances about a situation (i.e., rendering a situation into a speech plane, "signifying" it), reproducing a text just heard and retelling it.

Classes were built according to the following principle: it was assumed that the more complex a situation was in which a child found himself - the more complex the sign construction reflecting it should be, and hence its speech commentary. However, the assignments of this type did not fully simulate the process of utterance construction for the lack of a significant feature - a communicative component of utterance construction. In reality, the need for a child to tell a story about a situation that arises right in the process of communication requires the child not only to describe it, but also to construct an address message that takes into account a partner's position, in other words, he should display an intellectual initiative (Sokhin, 1989).

That is why, speech development classes, in addition to tasks associated with language acquisition as a meta-means, put a great emphasis on the context of communication with adults or peers. The programs now provided for situations of dialogical communication in all types of activity, including story-role play. From now on, preschool children were taught how to tell apart different areas of communication and to build appropriate utterances based on a system of relevant linguistic means.

One of the renowned Russian experimental programs called *The Golden Key* (Kravtsov, Kravtsova, 2011) made the emphasis even more pronounced. Now the main goal was to organize an event space in the group with speech development tasks being subordinate to this goal. For example, all of a sudden a teacher "has lost" the power of speech. Another suggests "going" to Africa where there is some juice that will help the first teacher to regain her voice. During their journey, the children meet local people. In order for the locals to understand what the children are asking them for, the children are to correctly pronounce a sentence.

The transfer of emphasis from speech development to the context of communication skills development seems quite appropriate as it is communication that serves as the initial function of speech while the cognitive function, one of signification and generalization, grows out of it because of the need for communication. The programs, including speech in the context of communicative skills development, offer more possibilities to tackle the problem of transmitting one's own meanings and constructing a targeted utterance.

A promising trend was shown in the classes that incorporated children's productive activities. For example, writing stories in *Key to Learning* (Veraksa, Dolya, 2018), which is widely used in Poland, Scotland, Wales, Malaysia and other countries. They simulate situations that in fact constitute divergent assignment requiring children to find possible solutions to problems precisely by using various linguistic means (by telling stories, etc.). Of special importance is the fact that children are confronted with the need to solve a fundamentally new task - not only a communicative or cognitive, but also an artistic - and aesthetic one: the care-giver specifically requests to express

themselves in a more accurate, figurative, original or comical way. The inclusion of such tasks appears to be highly productive: when composing own texts, a child gets a chance to show himself as an individual, to display own activity and initiative.

Planning "speech" classes was associated with children's awareness of linguistic phenomena. This work was aimed at forming speech voluntariness. Theoretically, it was based on the study by Felix Sokhin (Sokhin, 1979) who showed that children's speech developed not so much through imitation, but as a result of the formation of linguistic generalizations. He worked out special tasks enabling preschoolers to understand such linguistic phenomena as polysemantic words, synonyms, antonyms, etc. Similar activities were conducted in the form of story-role play or a didactic game. Conformity with linguistic norms (e.g. choice of synonyms or similes, correct understanding of phraseological units, etc.) is a recipe for success in play. At the same time, the lessons emphasize the importance of spontaneous word-building experiments in children and recommend teachers to support them.

The analysis of speech education programs intended for preschool children allows us to say that at their speech development tasks preschoolers' use of language provides them with an opportunity to develop their abilities, first and foremost, their communication skills, involving the usage of connotational meanings. At the same time, one should differentiate between tasks of constructing a targeted utterance, on the one hand, and the awareness of linguistic phenomena, on the other. Preschool age is unique for developing a proper speech ability which can be understood as an ability to use language as a meta-means for planning and utilizing the child's intellectual initiative in a verbal sphere.

### MEDIATION IN THE COGNITIVE DEVELOPMENT OF PRESCHOOL CHILDREN

Important line of preschool children's acquisition of the tools is cognitive development. Russian preschool educational programs can be subdivided into three groups. Each of them solves this problem in its own way.

The first group includes programs which main objective is to expand a child's knowledge and experience, to develop emotional, personal and social spheres. Children form ideas about basic concepts of reading, writing and arithmetic (for example, about the concepts of "number", "quantity", "sound", "letter", etc.) in a spontaneous and uneven manner. Thus, it can be said that though the programs of this group envisage a line of mediation development they, however, do not outline the ways to implementing it in a structured way (Babaeva, Gogoveridze, Solnzeva, 2014).

The second group singles out cognitive development as one of its main objectives. It is understood that a child assimilates or "photographs" ways and means demonstrated by an adult in the course of play, communication, productive activities,



learning, etc. No special work is expected to be carried out on mediation development. According to representatives of this direction, the specifics of interaction between child and adult in implementing these programs are determined by well-established trustworthy, emotionally charged relationships and created problem situations. These transformations are beneficial for cognitive activity and children's initiative. Creation of special conditions and use of a special subject-developing environment foster spontaneous development of intellectual and creative abilities as a child begins to explore various spheres of human culture and life activity. These programs envisage spontaneous development of abilities through children's "discovery" of various ways of thought activity as expressed by their teacher. The educator stimulates cognitive activity and encourages the child's initiative (Kratsov, Kravtsova, 2011; Solovieva, 2014).

The third group of programs is directly geared towards cognitive development of children. In this case, the main goal is to have children implement the tools of mental activity. In preschool age, these include visual and graphic tools as well as words. The construction of programs for preschool children in this case was based on the theory of cognitive development put forward by Leonid Venger (Venger, 1983; Veraksa, Veraksa, 2014). Venger's proposed to view cognitive development as the formation of special means that perform the function of orientation in solving cognitive tasks. Due to its psychological nature, means were considered as cognitive abilities, the generating units of which included cultural tools and ways of dealing with them. That is why cognitive abilities began to be construed as lifelong formations, the development of which occurs as a result of communication between child and adult. Under the leadership of Venger, a widely used program called *Development* (Venger, Diachenko, 1996) was created for children to acquire systems of means and corresponding actions during classes specially designed for preschool children in kindergartens. Sensory standards and visual models served as tools and preschoolers were trained to use and create visual schemes and models to solve various tasks that involved object classification, story-telling, quests for hidden toys, etc. This effective approach however encountered critics that underlined importance of child's initiative introduced in free play; educational programs based on play and at the same time stressing importance of mediation in cognitive development of children appeared (Pomper, Dobber, 2017).

#### **MEDIATION IN DEVELOPING THE VOLUNTARINESS OF BEHAVIOR AND ACTIVITY**

Another aspect of mediation development in childhood that is reflected in the content of education is developing qualities related to the regulation of child's behavior.

Voluntariness regulation is expressed in the conscious formation of intentions actions in accordance with the rules, sometimes contrary to the initial motives.

On the one hand, voluntariness is considered in Russian psychology as a appearing in school as a result of the educational activity (Bozhovich, 2008), but on the other hand, the voluntariness is demanded when enrolling in primary school. This testifies to the existence of an indexes according to which the development voluntary behavior is possible even in the preschool age when performing those activities that are specific and accessible to the preschooler. The development of voluntariness is carried out not only in play, but also in special activities that lead to mastering the ability to highlight the learning task, determine the direction of the search for its solution, evaluate the results, correct mistakes.

The *From Birth to School* (Veraksa, 2011) program (which is currently the most widespread in Russia) specifically makes a special use of the tools to regulate children's behavior in different situations. Mastering one's own behavior occurs according to the following scheme. First, a teacher discusses a difficult situation that has arisen with children. The discussion reveals some undesirable ramifications. Then, both the teacher and the children determine an optimal strategy of behavior which becomes the rule of action in this or similar situation. After that, the children are invited to draw a picture to illustrate the rule of behavior. These drawings are discussed by the children and their teacher. Then both of them select one of the drawings that best conveys the meaning of the rule of behavior in the situation. This drawing serves as a sign that regulates the preschoolers' behavior. The sign is pasted into a special book of signs. The experience of using this book shows that the amount of conflicts resulting from their interaction is on the wane.

In *The Tools of the Mind* (Bodrova, Leong, 1996) program play is in the center of the educational process. It is stressed that children benefit from play when it is encouraged by an adult rather than from is spontaneously developing. For example, the program provides planning for play during which children are reminded of the importance of observing play rules and the rules that correspond to the role. Children not only discuss the game plan, but they also sketch it and in doing so they pay greater attention to the rule and, ultimately, live more efficiently through the play situation in terms of self-regulation development. In *The Tools of the Mind* program, the child's speech, external mediators and symbolic representations (a child's writing and drawing) act as tools. As external mediators, the first means the child uses are material objects, images of objects, physical actions of the child which he undertakes to gain control over his behavior. Material objects serve as a prop for mastering knowledge as much as the drawings of the child himself serve to memorize certain events. An equally important form of support (scaffolding) is the use of social contexts that enhance the efficacy of using cognitive tools. These social contexts differ in the degree to which they are controlled when switching from joint control to self-regulation during the play-out of game scenarios and exploration of strategies for monitoring the implementation of training activities.



The idea of mediation is widely used in a program *Key to Learning* (Veraksa, Dolya, 2018). It is based on three forms of tools that help to regulate children's behavior, that help to regulate own's behavior. As such stand visual models, visual schemes, representing the stages of the situation transformation (for example, the scheme of the seasons, where the winter passes into spring, spring to summer, summer to autumn, etc.); symbolic images of the situation, in a metaphorical form transmitting various relationships between its components.

Thus, the task of developing voluntariness is formulated in various educational programs. However, it should be recognized as a disadvantage that the tools for its development are not considered systematically. In other words, the development of children's mediation as the basis for voluntariness is not the sphere of interests of teachers of preschool educational institutions, which would act as an object of the teacher's independent care with the aim of introducing it in a concrete, socially supported product (Veraksa, Veraksa, 2015).

## CONCLUSION

The above examples of the educational programs addressed to preschool children show existence certain tradition of using cultural tools. This tradition is based on the provisions of cultural historical theory. Vygotsky himself stressed an importance of the cultural tools in the development of higher mental functions. He singled out, as was shown above, cultural patterns that acted as effective means of developing the child's psyche. They ensured the possibility of organizing the educational process in the zone of proximal development. Vygotsky assigned a special role to the symbol and language, which later became understood as a meta-tool. Possibility of using cultural tools in education was developed in educational programs: sensory standards, visual models, schemes and symbols were actively involved in educational process with preschool children. Researchers emphasize the relevance and effectiveness of mediation implementation in the education of young children. Those programs are effective in terms of first of all cognitive development for normally developing children. However this approach is also valuable in work with children with special needs (Glozman, 2016).

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## CONFLICT OF INTERESTS

There is not conflict of interest

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