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DEVELOPMENT OF THE MENTAL ABILITIES OF THE STUDENTS BILINGUALS

The article shows inner and outer conditions of the psychic development of the students bilinguals. The author analyzed the mechanism of the formation and development of the perceptive elements in the process of teaching bilinguals two languages. The author also presents pedagogical conditions under which mental abilities of students bilinguals develop, and finds out means aiming at doing it in an effective way.

Keywords: mental abilities, students bilinguals, development, teaching process, conditions

В статье раскрываются внешние и внутренние условия психического развития обучаемых, проанализирован механизм становления и развития перцептивных элементов в процессе обучения двуязычных учащихся на первом и втором языках. В работе приведены педагогические условия развития мыслительных способностей учащихся-монолингвов, а также выявлены условия эффективного развития мыслительных способностей двуязычных учащихся.

Ключевые слова: мыслительные способности, учащиеся-билингвы, развитие, условие, обучение

Solution of the issue of developing mental abilities of bilingual students within academic and educational process has a substantial theoretical and practical value. Revealing conditions for developing mental abilities is a key to formation of a purposeful and effective pedagogical influence on learners. The goal of our work is to identify a complex of conditions directed at effective development of mental abilities of bilingual students. According to the philosopher E.V.Ilyenkov, conditions within which a human being develops, define the whole process of this development. As he states, a teacher needs to identify precisely the conditions which facilitate to more effective mental development of learners by restricting those conditions inhibiting this development. Based on that "intentionally setting pedagogical situations which require a learner's mental ability and educate him by cutting off all inhibiting factors and conditions. This is, actually, a secret of the pedagogical art" [1]. N.A.Mechinskaya states that pedagogical conditions determine the process of learning and development of children's mentality. According to the scientist, pedagogical conditions providing mental development and representing controlling impact on learners on behalf of the teacher are external conditions related to a child's mentality. External pedagogical conditions represent summary characteristics of the physical and psychological environment within which a learning process takes place [2]. As for the issue of developing thinking abilities of learners, the given idea emphasizes the need in a complex work-out of didactic measures taking into consideration

learners' specifics which ensure high quality of knowledge and development of general educational thinking abilities. Dominating feature of bilingual students is their ability to receive and reproduce the information in two languages. External conditions have different impact on different learners, depending on how a learner treats the material he needs to receive, what learning experience he has, on what level he can organize the new experience i.e. on what development level his acquired skills to learn are. All these represent internal conditions of learning and psychological development. Conditions for mental development called external or internal, in our opinion, are tightly linked and there is no clear differentiation between them. Each external condition is based on aspects of internal conditions; internal conditions are realized and can be revealed only through created external conditions. Using the experience acquired from interaction between external and internal environment of the organism is defined as the most important function of the brain. Genetic specifics of brain mechanism of representatives of a certain nationality are one of the factors which influence development of their thinking abilities. Each organism starting the life encounters a new environment which is somehow different from the environment in which previous generations have lived. Genetic basis of the brain functions provides only certain possibilities for acquiring exact experience in a certain environment. According to E.A. Umryukhin, what he person becomes in his life, his conscious and unconscious mentality are the result of the interaction between genetic mechanisms

of the brain and exact conditions of the environment [3]. From the perspectives of the issue under study, we would like to present learning as the process of acquiring an experience in the academic process which is reflected in the brain on its interaction with external or internal environment. Learning based on acquisition of the experience fixed in memory traces is identified at every stage of the organism's life by possibilities related to mature, genetically basic structures and experience acquired earlier. In our opinion, general conditions which provide effective process of developing thinking abilities of both bilingual and monolingual students are:

- 1) content of education;
- 2) optimum choice of methods and organizational forms of education matching the set goal;
- 3) applying systems of problematic and creative assignments, tasks and questions which ensure activation of cognitive and speech activities of learners;
- 4) formation of learners' positive motivation of cognitive and speech activities;
- 5) organizing collaboration between the school and the family in solving the stated issue. However, cognitive process of bilingual students compared to monolingual students has distinctive features, and in this regard, requires identification of additional conditions. The process of interaction between two language systems in the learning process of a bilingual learner has its specific features. Design of the educational process of a bilingual learner taking into consideration these specifics is one of the primary conditions of effective de-

velopment of his thinking abilities. Let us examine in detail the mechanism of forming perceptual elements in a native (first) language and the second – learning language. Establishing the links in the system of the first language chronologically precedes the system of the second language. Learning connected with establishment of perceptual elements and links between them in the system of the first language, corresponds to a person's learning at his infantile age in the native language. The basis of this learning (usually called as development) is made by the genetically formed needs. Obtaining results which satisfy these primary needs (calling things of first necessity) creates perceptual elements and their chains at the deepest stages of the first language system which is similar to the formation of the memory elements. Simultaneously at the earliest age of the child learning involves genetically founded information and his first experience, first knowledge. At the beginning of the learning based on genetically founded structures are formed some primary perceptual elements which program an activity, sensitivity of receptors for obtaining reproduced intermediate results in the environment. Results, at least partially, can be programmed genetically, and at first they are defined by accidental character of links between memory elements. Selection of reinforced and fixed links is defined in all situations by reproducibility of anticipated results. Thus, primary formation of elements and links in the first language system takes place slowly by the "trial and error" method. Slow formation of links is feasible because slow learning is essential for safe extraction of the information on probable features of such environment and on those subjects, phenomena, and events which repeat and features of which are reproduced well. To reflect such subjects, phenomena, and events in the memory, they must be repeated sufficient number of times in a native language, against events, subjects, and phenomena which are repeated little or not repeated at all. The process of forming perceptual elements corresponding to natural, repeated features of the environment is realized under the influence of two forces:

1) information, first experience, first knowledge genetically placed in a child;

2) reality bearing the requirement to assimilate actual new knowledge.

Final stage of the process of forming perceptual elements in the system of a native language creates an opportunity to connect these elements with those of the second language system. After that starts a rapid process of learning under the conditions when the number of freedom levels reduces significantly. Rapid learning is caused by possibility to form rapidly links in the system of the second language. It, in its turn, is determined by the fact that this system reflects enlarged, reproduced and natural features of the environment which have already been embodied as a result of repeated trials and errors in complex perceptual elements of the first language system. Further learning is substantially reduced to the formation of combination rules and combination of the acquired codes. Formation of the structure in the brain which is similar to the system of the second language can be presented as a branch of hierarchical system of the first language. Going from the highest to the deepest levels the process of forming complex perceptual elements can be isolated to units connected with communicative needs and include creation of memory units of deeper levels. Thus, there occurs a "branching" from the major hierarchical system of the first language. The given "branching" of perceptual elements creates the second language system which does not have deep communication need blocks at first but which can appear consequently. Formation of multilevel perceptual elements is the most difficult and important aspect of the learning optimization approach examined by us. While analyzing the learning process which proceeds during the formation of perceptual elements of the first language, it is essential to take into consideration the fact that a perceptual element responding to a certain stage result can at the same time belong to various language systems. During the process of establishing perceptual elements in the learning process takes place a selection of the most significant features of the stage results which ensure acquisition of the end result. Learning can be accelerated significantly if perceptual elements are created in advance and only mastering new combinations of these elements formed from new chains

are needed. One of the most important differences of the second language system is the possibility to form rapidly and change conductivities of the links. Such combinational «cognitive» activity requires involvement of attention and, therefore, is characterized by limited volume of elements included in it. Increase in this volume results from connecting the system of the first language to this activity. Let us remind that the system of the second language is a part of the environment for the system of the first language. Often repeating activity of elements of the second language system is reflected in excitation of elements of the first language system and creates in it appropriate perceptual elements and links between them. It enables automation of the behavior formed at the beginning by the second language system. And the paths planned first consciously, are fulfilled automatically and unconsciously. Thus, there can be formed stereotypes which match both behavior programs and quite complex forms of thinking. The system of the second language reproduces function of intelligent use of language and other human forms of reflection and comprehension of the material and social environment, related to development of the civilization and public forms of life. Therefore training based on established structures of the second language system is substantially caused by specific (specific techniques) forms of transferring experience of human civilization to an individual, i.e. existing educational systems, education and social communication. Training in the system of the first language (in native language) continues after the system of the second language is formed. Primary training continues after the second language system has been formed and involved in the work. Primary training is connected with the formation of new perceptual elements and their links in the first language system, the elements which respond to new paths of behavior in the external environment. Learning becomes effective when success is achieved at the final stage and the chain of elements corresponding to intermediate results at the next level is reinforced. Then achievement of each of these intermediate results becomes reinforcement for formation of memory traces at a much higher level. Thus, the

multi-level perceptual element corresponding to achievement of important stage result in a difficult skill is created.

Often initial stage of the training passes without explicit realization, on an unconscious and intuitive level.

Big and sometimes defining role in formation of perceptual elements and hierarchical structures of the first language system is played by the process which is usually called as imitation. During imitation a training process occurs by one person's observation and subsequent reproduction of successful programs fulfilled by another person. The given process can be presented as a learner's embodiment of images of intermediate successful results formed during perception of behavior programs which come to an end with receiving the required final result of another person. A learner's acquisition of intermediate results matching the embodied images reinforces and creates memory cells which give the final

outcome. Processes selected for the first language system proceed unconsciously, automatically, without monitoring the consciousness. The second language system outlines the processes which are often or more often realized during communication or which can be easily realized by a person who knows the language fluently. Based on the held analysis of the process of formation and development of perceptual elements in the first and second languages of bilingual learners, we can draw a conclusion that organization of bilingual educational process will facilitate to effective development of thinking abilities of bilingual learners provided it is organized in accordance with the stages highlighted by us:

1) initial stage – formation of perceptual elements and their links in the system of the first (native) language;

2) stage – formation of perceptual elements and their links in the system of the second (foreign) language,

starting when the first language system has been established significantly and a transfer to the second language system arises;

3) stage – formation of perceptual elements and their links in the system of the second language reflecting multiple repeated paths of activity of the first language system, automatic complex mental operations.

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