TEACHING MATHEMATICS WITH THE PECULIARITIES OF DIGITAL GENERATION CHILDREN

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Subject of the study: On December 14, 2016, the Government of Ukraine approved the Concept for the implementation of the state policy in the sphere of reforming the general secondary education "New Ukrainian School" for the period up to 2029 (14.12.2016, No. 988-p). The Concept of the New Ukrainian School envisages the teaching of pupils taking into account their individual and age-old peculiarities. Therefore, the issue is the development of a methodology for teaching mathematics in primary school based on the data of modern psychological research on the peculiarities of cognitive processes in children of digital generation.

Objectives: The purpose of our study is to study the peculiarities of the cognitive processes of modern primary schoolchildren and on this basis the development of a methodology for teaching mathematics in the 1st to 2nd grades of the New Ukrainian School, the results of an experimental verification of its effectiveness in 100 pilot schools in Ukraine.

Methods used: Children born after 2010 are considered to be representatives of the digital generation. Today these children are already studying at elementary school. It should be noted that in the studies of European scholars, there are two fundamentally opposing views on the impact of infocommunication technologies on higher mental functions: positive (Small & Vorgan, 2008; Fish, Li, McCarrick & Partridge, 2008; Jackson, Witt, Games et al., 2012) and negative (Spitzer, 2014). However, there is a growing number of studies that prove that digital technology gives the younger generation more benefits than disadvantages. Employees of the G. S. Kostiuk Institute of Psychology of the National Academy of Educational Sciences of Ukraine (Honcharenko, 2014) conducted a large-scale study of children of the digital generation. It reveals the characteristic features of the perception process, which manifests itself in the saturation of information that children do not even try to analyze and memorize; in the orientation on the graphic image of the word, and not its semantic meaning; in deteriorating attention, inattentiveness, inability to highlight elements of the story, riddles, mathematical problems; the difficulty in distinguishing even the opposite statements. This means that in modern mathematics teaching methods it is necessary to provide means that will facilitate processes of perception, awareness and memory of educational information. We implemented the element by element assimilation of mathematical actions by working out the components of complex action on the previous stages of learning, which allows stretching in time the process of assimilation. Thus, until the pupils have been acquainted with the new way of action, all the elements of action have already been formed, and children must only consistently perform the assimilated operations. In addition, in order to facilitate the processes of awareness of educational information, we have developed a method of "updating the known method of action in the light of changing conditions": new knowledge and methods of action are introduced on the basis of comparison with known situations, identifying the characteristics of the new situation and transferring the way of action. This technique can be characterized by one phrase: "what has changed and how this change will affect the solution?".

In recent decades, there has been research confirming the positive impact of digital technologies on the development of visual intelligence: the ability to simultaneously control several visual stimuli, visualization of spatial relationships (DeBell & Chapman, 2006), image recognition, visual memory development (Van Deventer & White, 2002), metacognitive planning processes, search strategies and information evaluation (Tarpley, 2001). There is a need for visualization in the schoolchildren of the digital generation, in the visual schematization of learning actions, clip (NET) thinking, they see the picture not entirely, but perceive the information on the principle of the clip, omitting details "catch" the essence; there is a loss of ability to perceive volume texts, a habit of short messages that do not require concentration, concentration of attention, tracking plot lines (Honcharenko, 2014). Operation in the virtual reality leads to the fact that the schoolchildren improve the ability to manipulate objects in two-dimensional space and worsens - in three-dimensional.

In this regard, we propose to motivate the introduction of a new material, transferring a known method of action to a new situation, through the work of schoolchildren with mathematical materials with the subsequent transition from action with objects to their substitutes — first these are drawings, and then the solution schemes. Searches for answers at the first stages of assimilation, the action are performed as fully developed with fixation of all intermediate operations. Only after understanding the essence and sequence of actions, reduction of the action and fixation of the main operations are possible.

Children of the digital generation have an excessive ability to learn virtual digital information. In this regard, we suggest using both visual and virtual visual imaging - interactive exercises, for example, created on the platform

Learning Apps. Given the imaginary multitasking, fast switching from one task to another, we suggest changing both the types of activities and the pace of the lesson during the lesson.

Result summary: At the moment, intermediate data have been obtained that testifies to the effectiveness of the implementation of the method of teaching mathematics for first-graders, developed on the basis of taking into account their characteristics as children of the digital generation. Since in the first class of the New Ukrainian School there is no ballroom evaluation, we received information on the positive results by questioning the teachers of the pilot (experimental) 1st classes (2017-2018 academic year). Children have increased the motivation of learning; they perform research tasks with interest, learn the material more easily and more quickly, and can use what they have learned in new learning situations.

Brief conclusion: We see the prospects for further research in the search for effective means of influencing the different categories of pupils in their cognitive abilities, in developing the technology of teacher work with different groups of children on the same educational problem - at the basic level for weak schoolchildren and in-depth for the strong.

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