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Development of cyclic representations of senior preschoolers.

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Abstract

This article is dedicated to the opportunities of development of cyclic representations of preschool children. Cyclic representations are mental structures allowing the reflection of development processes in the world around. An educational experiment is described where the children were suggested to solve some problems that required the application of dialectical mental actions. The evidence obtained as a result of this experiment lead to a conclusion that cyclic representations may be amplified through specifically designed educational program.

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1. Introduction

Development is a basic feature of reality. Therefore it is vitally important to understand in what extent preschool children are capable to reflect this world as a developing one. The structure of development as a dialectical process was described by G.W.F.Hegel in the following words: development is not just a gradual building up of a new quality but an emergence of an opposition denying the initial object, and then – the withdrawal of the controversy, i.e. the negation of the negation. Thus the development moves in a spiral way which combines both linear and circular motion. The object transforms into its opposition and then returns to initial point but on a new spire. Cyclic processes include, for example, time cycles, such as diurnal or annual ones, etc. All time cycles clearly reveal the structure of transformation of oppositions.

J.Piaget and his followers showed in their research works that the representations of children under 7 are of static character, and children under 9 had a lot of difficulties when it came to comprehension of the logics of transformation of an object [1]. The studies by L.Elkoninova demonstrated that children become capable of anticipation of the situation based on the understanding of the logics of deployment of events, only by the age of 6 [2]. N.N.Poddyakov also revealed that the ability of perception of the world as a developing one is located in the

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zone of proximal development of junior preschoolers, i.e. it shows itself only in certain educational situations [3]. Cyclic representations allow the child the reflection of consistent repetition of the processes taking place in his environment, and noticing the non-randomness of the events' sequence.

Relevant studies confirmed that children are indeed immersed into cyclic transformations of the world around; they witness those transformations happening to various objects and animate creatures. Still the ideas and representations of children regarding such transformations are of fragmentary nature, they do not form an integrate structure as mutual transitions of oppositions [4].

So, spontaneously emerging cyclic representations of children are fragmentary and not systemic. However it allows the suggestion that those cyclic representations are located in the zone of child proximal development and can be developed within specifically designed educational situations.

The studies by N.E.Veraksa, S.A.Romanova and S.A.Zadadaev demonstrated that cyclic representations are systemic and can be described as a dialectical category [5, 6, 7, 8]. This idea formed the basis of the educational experiment; it was decided to create a series of problematic situations, so that the children could discover the relations of circularity existing in this world, while resolving them.

2. Method

The study took place in May and April 2014 in the kindergarten №1602 Moscow. 5,6-6 year old children became the participants of research. They were divided into the experimental (25 people) and control group (40 people).

The study was a formative experiment on the development of cyclic representations through solving of dialectical problems. Before the experiment was started and after it was over the participants were suggested to complete diagnostic tasks "Cycles A" and "Cycles B" intended to reveal the existence and the character of cyclic representations.

Through the performance of "Cycles A" task we analyzed the capability of children to see not just a row of varying objects but in a series of pictures but the process of development of one object (i.e. to make up a story instead of creating a classification). In this case we tried to find out which strategy was implemented by the child: the formal logical one or the cyclic one reflecting the development. When completing the "Cycles B" task children were supposed to define the relation of analogy between some series of events. We analyzed what they used as a basis of this analogy: objective characteristics of the objects ("it's a vehicle, too", "it's also about winter") or the structural characteristics of the cyclic process ("here he also leaves and comes back").

Preliminary validation of the techniques "Cycles A" and "Cycles B" was performed, in order to confirm their discriminatory power, internal coherence and test-retest reliability.

Besides that both before and after the educational experiment special diagnostics was executed focused on such parameters as the ability to refocus (Nepsy II Inhibition), understanding of the other's position (Nepsy II Theory Thoughts), auditory attention (Nepsy II Auditory Attention) and imagination ("Completing the figures" technique by O.M.Dyachenko).

Starting diagnostics revealed that the results of examination from experimental and control group before the beginning of the experiment speak in favor of the absence of significant difference between these groups.

A special series of situations was designed for this experiment, so that the children could discover cyclic structures existing in the world around while handling with these situations and solving various cognitive and project problems. In order to do that, children were to perform dialectical actions of transformation, seriation, mediation and so on. In particular, the problems for anticipation were designed (completing the stories), transformation (picturing the oppositions), defining of relations of oppositions (diurnal and nocturnal animals, etc), identification and disengagement (seeing the identity and the difference of spring and autumn, morning and evening, etc). According to cultural historical approach to preschoolers' development, a visual model is the most adequate mean of psychical activity at this age (for example, creation of the story on how day turns into night, or about a snowman or a little branch). In this case children could centre upon a visual model of transformation of the oppositions, mediation or a cycle. However the participants used this model as much as their relevant mental

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