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Research Article

# DEVELOPMENT OF ECOLOGICAL THINKING OF PRIMARY SCHOOL STUDENTS

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## ABSTRACT

One of the most important ways to get out of the ecological crisis is the emergence and development of ecological education and education for children, which helps children to form new ecological thinking and new attitudes to the environment. The article covers the issues of formation of environmental thinking in school-aged children.

## KEYWORDS

Ecology, school, child, thinking, student, environment, nature, landscape.

## INTRODUCTION

The scientific and technological revolution of the 21st century affects all aspects of society. The rapid acceleration of the scientific and technological revolution is causing massive human pressure on nature, which is leading to changes in the environment. The growing conflict between society and nature has caused the danger of a global ecological crisis.

However, the traditional pedagogical reality cannot solve the problem of formation of ecological thinking as required by the state of modern society and biosphere.

The main content of this scientific-pedagogical research is to determine the ways of forming ecological thinking as an integral part of the ecological culture of a schoolchild in environmental classes. The Laws "On Environmental Protection" and "On Education" and decisions on environmental education of students in educational institutions will help to bring these ideas to life.

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By the time he goes to school, a 6-7-year-old child should have developed visual-motor thinking, which is a necessary basis for the development of visual-visual thinking, which forms the basis for a child's successful studies in primary school.

A child with a high level of visual-motor thinking can work well with any type of productive activity that requires working on a model, comparing the size and shape of objects to solve a specified task. only after that, the ability to solve on a concrete subject basis will be characteristic.

School education is structured in such a way that verbal-logical thinking has a priority development. If in the first two years of education, children work more with visual examples, the volume of this type of activities will decrease during the study in higher grades. The formal initiation becomes less and less necessary in the learning activity thereafter. In the process of teaching, children of junior school age develop scientific concepts. Acquiring the system of scientific concepts in the process of teaching allows to talk about the development of the fundamentals of conceptual or theoretical thinking in children of junior school age.

As theoretical thinking develops, visual-active thinking and visual-model thinking will not disappear, but they will change again, improve, and rise to a new stage of development. Between them, multifaceted, complex relationships are created that change from one situation to another in various individual variations.

The previously stated rules, as well as the analysis of psychological and pedagogical literature, allow us to formulate general laws in the development of the thinking of a student of junior school age:

- high rates of thinking development;
- significant structural and quality changes;
- the higher levels develop and do not suppress the lower levels, but change them again;
- child's analytical activity from visual-motor analysis to abstract-mental analysis; it develops from the analysis of a separate object or event to the analysis of relationships and relations between objects and events;
- children develop the ability to abstract, analyze, form hypotheses, model, predict;
- in a certain content and conditions of teaching, it is possible to form concepts that bring about a sufficiently high level of abilities to generalize and abstract, to acquire knowledge of scientific and theoretical characteristics in a child of junior school age.

In the previous section, we noted that thinking is a leading function in early school age. This is how thinking operations develop. What kind of thinking a child will have will depend on what knowledge he can acquire and how he can use it in life.

Let's look at the concept of "ecology" to understand what is unique about ecological thinking. Nowadays, in the scientific and educational-methodical literature, one can find a lot of different definitions of the term "ecology".

According to the generally accepted definition, ecology is a science that studies the system of living organisms, their relationship with the environment, and the relationships between different forms of life. But in the minds of many people, "ecology" is also associated with such concepts as "danger", "protection", "preservation".

In the encyclopedic dictionary of biology, ecology is defined as the science of interactions between organisms and their environment [1].

The following definitions are also given in the "Landscape Protection" spelling dictionary:

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- ecology - a collection of scientific and practical problems in the interaction of man and nature;
- ecology - a complex science network that synthesizes information from natural and social sciences about nature and its interactions with society;
- ecology is one of the biological sciences that studies living systems and their interactions with the environment [1].

Thus, for ecological thinking, orientation of thinking operations to solve environmental situations or problems arising as a result of human actions in nature is of great importance.

Ecological knowledge serves as a basis for ecological thinking.

Ecological knowledge is knowledge about natural causal relationships and laws. And therefore, it is ecological knowledge that reveals the content of natural science and makes it possible to understand the processes, the peculiarities of living systems as a result of these processes. Only from the standpoint of ecological thinking, the world, existence, environment can be perceived as a whole.

The formation of ecological thinking can occur only when the knowledge about the three blocks - biological systems, habitat and the interaction of factors in this environment and systems is developed.

The system of acquired ecological knowledge is closely related to the system of assimilation of the same way of thinking, because knowledge about the need to protect nature can be effective only when the child understands the causes of adverse changes in nature and can predict their (both negative and positive) consequences for human activity. [2]. Acquisition of objective and relatively complete ecological knowledge by children ensures the formation of ecological thinking objectively and correctly.

In the conceptual-terminological dictionary, ecological thinking is defined as "the basis of proper citizenship relations with the environment; in situations of moral choice and prediction, it is considered as determining the causes and nature of problems, solving them, as well as determining causal relationships, probable and predictive relationships, and other types of relationships" [3].

The concept of "ecological thinking" is based on causal relations.

A large number of studies show that a child of junior school age has difficulties in defining and understanding causal relationships. For children of this age, it is much easier to establish cause-effect relationships than to establish cause-effect relationships. This is also understandable: when reasoning from cause to effect, a direct connection is established, while when reasoning from evidence (fact) to the cause that caused it, such a connection is not directly given, because the evidence (fact) shown can be the result of various causes. , they need to be analyzed in a special way. Accordingly, it is necessary to try to understand them, to understand the internal connections between events, and not to memorize cause-and-effect relationships by students of junior school age.

Based on this, the students to find the cause according to the effect; to foresee the consequences of any event; it will be necessary to teach to show the complexity of causal effects in nature. In situations where the teacher does not guide the development of ecological thinking by forming appropriate methods of mental activity, the wrong way of thinking appears in the students, which disappears very slowly in the process of the child's development.

Empirical studies have shown that explanations of the spontaneous causes of natural phenomena and the

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consequences of human activity are extremely imperfect. Children of primary school age are often unable to causally explain the consequences of natural phenomena and human activities, and are limited to undifferentiated generalizations of some of their components. And only later, during development, do students move from undifferentiated generalization to a much higher order of generalization, where they are able to distinguish first individual causes and then the complex of these causes that led to this effect.

Including, prognostic (predictive) relevance is also noticeable in this concept. It makes conclusions about the future development and onset of environmental laws based on any data.

A prediction is a foresight based on special research; it is to draw conclusions about the future development and initiation of environmental laws based on any given data.

L. V. Moiseeva and I. R. Koltunovas emphasize that environmental forecasting is a prerequisite for the deployment of production forces, development of the national economy, and rational planning [3].

No less important is alternative communication, which consists of the ability to choose the most optimal option that can be accepted in existing situations from among many other options.

Alternative is choosing one of two or more possible options, raising doubt in the child about the uniqueness of his opinion, childish thinking turning into a personal hypothesis - eliminating the belief in the one hundred percent correctness of one's own imagination, which testifies to the hypothesis.

A hypothesis is a scientific opinion, hypothesis put forward to explain any phenomenon.

In children, a hypothesis is born (and can be, and then needs to be tested), an emotional object is necessary. It can be anything that can be turned, held, smelled, played with.

Hypotheticality is characteristic of knowledge that needs to be explained first.

Hypotheticality is one of the fundamental features of scientific knowledge and one of the developed forms of human thinking, which must always be supported and developed.

Understanding the hypothetical level of modern explanatory (theoretical) knowledge is one of the conditions for their full mastery.

An adult should never allow sarcasm and laughter to be used in the interpretation of children's answers, comments and explanations. The same applies to an adult's attitude towards children's questions. The question and the possible answers to it (hypotheses) are two interconnected aspects of one and the same process of thinking. The lack of interest, the absence of a logically stated question, leads to the absence of hypotheses in the students' thinking.

The main directions of working with children's hypotheses in elementary school are to raise doubts about the uniqueness of one's own answer, increase the height of the disconnection of explanatory principles from empirically observed phenomena, the emergence of the logic of "if ... then ..." consequences, naturalistic explanatory scheme of what is observed. It consists of overcoming the (natural) addition.

Hypothetical thinking of children in primary school is in the zone of their immediate development (L.S. Vygotsky), that is, it cannot exist without the cooperation of children and teacher.

I.S. Telegina [4] believes that ecological thinking should be considered not as a new form, in addition to the types defined in the philosophical or psychological-pedagogical literature, but as an orientation of thinking

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that is considered a specific level for a child. In doing so, he must ensure the survival of humanity in the current conditions of ecological crisis.

Ecological thinking takes into account the priority of universal affairs, takes into account the environmental problem in a wide social range, analyzes the interaction of society and nature on global and regional scales, and emphasizes the ability to foresee the near and far future consequences of human influence on nature. This way of thinking involves both hemispheres of the brain more than other parts, helping to develop non-standard, creative, alternative solutions that are very important in solving environmental situations.

Environmental thinking can also be called creative, creative thinking, as new, unusual creative tasks are solved when solving environmental problems [4]. V.P. Kalenskaya says that according to this, "ecological thinking is a thinking that has a sign, the distinctive aspect of which is a 'creative feature'" [5].

Ecological thinking helps to adopt non-traditional ways of thinking, to see the problem in an unusual way and to accept the possibility of thinking that deviates from the usual ways of thinking. It is characterized by the originality and unusualness of the ideas presented, the desire for intellectual innovation, the ability to see new aspects that are personal, different from others, and hidden from the outside.

Psychologists distinguish the conditions that help or hinder the quick finding of a solution to a creative task:

1. If the method used to solve the task was successful, then it encourages the person to rely on this method of solution.

2. The more effort that goes into finding this method, the more often it is used. This prevents a person from abandoning the previous thing and finding a solution to the task in a new way.

3. It is necessary to create a situation of success in order to strengthen the intellectual potential of people.

4. The more knowledge a person has, the more approaches he has. It is necessary to encourage people to come up with a new idea, no matter how unusual it may seem at first glance. In this case, it is allowed to criticize the ideas themselves, not the people who put these ideas in the middle [6].

Ecological thinking is a reflexive, i.e., conscious control over the course, forms, conditions and foundations of cognitive activity, an active mechanism of the emergence of environmental problems, and the ability to understand, formulate and see their practical solution.

Ecological thinking is a higher manifestation of mental activity aimed at mastering the theoretical and practical methods of development of cultural values and standards, the system of scientific knowledge [5].

I.S. Telegina describes the following types of ecological thinking.

The peculiarity of verbal-logical ecological thinking is that, according to it, the tasks facing a person are solved in a verbal-logical form using a verbal form, in which it is "ecology", "system", "man-nature", "ecological monitoring", uses abstract concepts like "environment". This type of thinking helps to identify the most general laws that determine the development of nature, society and man himself.

It is characteristic of ecological visual-visual thinking that the content of the task for thinking relies on exemplary material: while solving the task in front of him, a person tries to generalize samples of various objects, phenomena, events, such thinking is typical for the authors of artistic works about nature. Thinking with the help of models and images ensures that the

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object's aesthetic and spiritual-ethical value is revealed, encourages high moral actions and emotional experiences, stimulates creative activity and the development of valuable directions.

Demonstration-active ecological thinking is characterized by the fact that here the task of thinking is solved in the process of activity, it is from this type of activity that intellectual development in the process of the birth of human labor activity began. This kind of thinking is typical for people who are in direct contact with natural objects.

Correctly formed ecological thinking expresses the activity of cognition, helps to understand ecological laws and leads to the emergence of confidence in the necessity of nature protection, and is the basis for understanding the essence of natural phenomena by schoolchildren.

Thus, ecological thinking includes:

- thinking operations aimed at solving environmental situations and problems;
- ecological knowledge and understanding of the integrity, systematicity and process of the environment;
- ability to predict the final result;
- to be able to put forward hypotheses and choose the most appropriate among possible options;
- the ability to determine cause-and-effect relationships.

It is these characteristics of ecological thinking that are later used as indicators of ecological thinking in diagnostic studies.

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