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USE OF MODELING TECHNOLOGY IN ECOLOGICAL EDUCATION OF PRIMARY SCHOOL STUDENTS

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ANNOTATION

The use of modeling in the environmental education of primary school students is related to the diversity of natural phenomena. However, many of them, such as fear, the hidden lifestyle of animals, the periodic nature of seasonal changes, hidden within communities and perceptions of dependence, are objectively difficult for primary school-age children, so modeling these things is important.

The article discusses the use of modeling technology in environmental education of primary school students.

KEY WORDS: ***reader, nature, model, education, practical action, ecology, thinking, environment.***

The study of the impact of teaching on a child's mental development plays an important role in child psychology and primary education pedagogy. The impact of the learning process is directly related to its content and tools. With the help of spatial and graphical models, orientation activities improve relatively easily and quickly, cognitive, intellectual and practical actions are formed, and there are shifts in the development of environmental thinking in children of primary school age.

In pedagogy, modeling as a visual-practical method is widely used, especially in environmental education for children of primary school age.

The encyclopedic dictionary gives the following definition: "Modeling is the study of any event, process using the construction and study of models" [1].

According to NV Fetisova, ON Lazareva, "modeling is the process of creating and using models to form knowledge about the properties, structure, relationships and connections of objects" [2].

Psychologist I.A.Telegina describes modeling as "an indirect practical or theoretical study of an object, in which what we are interested in is not a direct, but an auxiliary, artificial or natural system (" half-object "). some objective correspondence with an object capable of providing information about the object "[3].

Models are objects of modeling. A model is any image (mental or conditional) ("original" of a particular model) that is used as a "substitute."

Therefore, in our opinion, Novik more fully reveals the essence of modeling as a process of replacing real objects or objects with artificially created objects.

The uniqueness and importance of modeling is that it plays an important role in the formation of knowledge, facts, phenomena, the formation of properties, connections, connections, content close to the concept of things that are hidden directly from perception.

The use of modeling in the environmental education of primary school students is related to the diversity of natural phenomena. However, many of them are objectively challenging for primary school-age children, hidden from perception, such as fear, the latent lifestyle of animals, the periodic nature of seasonal changes, relationships within communities, and dependence. After all, their ecological thinking activities are still going on.

Therefore, in some cases it is necessary to simulate certain events, objects of nature and their symbols. Working models are of particular importance because any static substitute for a natural object (painting, puppet) only gives an idea of its external features. The current model, similar to nature, reveals the nature of the object, its relationship to the environment, and is more comfortable for children (which is very important!). In addition, the visual demonstration allows children to form a true, genuinely benevolent attitude towards living things, defining elements of ecological culture.

From the point of view of mental education, working with abstract models is of great importance because it is abstract and clearly shows the natural relationship, cause and effect relationship of natural objects. And this allows for a general knowledge of the phenomena, contributing to the development of not only visual-figurative, but also logical ecological thinking. For the development of children of primary school age, it is also important to get acquainted with the regular changes in nature: the growth and development of living things, the seasonal changes of nature.

Thus, in developing the content of knowledge for students, teachers should pay great attention to change, movement, and development as universal properties of the things around them. At the same time, to predict such aspects

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of the environment is to think of it as the ability to establish the generality of objects on a genetic basis.

The constant value of mastering visual modeling is a convincing proof of a number of studies conducted by Uzbek scientists [4, 8, 9].

Thus, it has been shown that the reason for the failure of school students in physics is their inability to present the objective conditions of the problem in an exemplary form. If such an opportunity is created (by moving children to later modeling and teaching them to draw real diagrams), school children will be able to successfully solve problems that were previously difficult for them.

Visual modeling has found wide application in the work of the gradual formation of mental actions and concepts, which serve as one of the main means of creating an indicative basis of action.

The scope of modeling is not limited to solving educational problems. It encompasses the most diverse types of human thinking, allowing us to conclude that modeling their conditions plays an important role in solving technical, constructive, geometric, heuristic, and even logical problems.

An important part of thinking is analysis. Analysis is a complex process of thinking, which involves distinguishing important features and properties of the object of knowledge (the process under study) [11].

Analysis is inextricably linked with the process of synthesis, ie the integration of different features and properties of the object of knowledge into a whole, in which all the information about the process of practical vocational education is known-generalized models, ie analysis of this information, highlighting the main idea. represented by integral diagrams [11].

Accordingly, we found it appropriate to use the method of modeling in the development of the methodological structure of the organization of the process of practical vocational education and acted on the principle of a systematic approach. In doing so, we have taken into account the following points of view:

1) The term "model" is interpreted in a number of ways: a model is a specific tool that allows you to master the generalized knowledge of a number of relationships and laws of existence (P.Ya. Galperin et al.); model is a means of forming generalized notions about quantitative relations; a model is a block diagram that helps to analyze the information, highlight the main idea, and generalize the knowledge obtained [7].

2) According to the research of philosophers, psychologists and educators (Yu.G. Tatur, VV Kraevsky, etc.), pedagogical structures (systems) are inherent in social structures, which have the following important features: purpose, general laws and the existence of real interrelationships characterized by [6].

In our study, we carried out didactic (methodological) modeling of the process of practical vocational education in professional colleges and its structure (components) on the basis of a number of principles:

1) the content, organizational forms, methods and means of practical vocational education, which are the basis of the educational process of students, as well as the order of experimental and educational work performed by students;

2) the structure of the educational process, ie they consist of certain interrelated parts;

3) uniform complexity, brevity and accuracy of the components that make up the content of the educational process;

4) the emergence of new structures, defined by the selection and selection of goals and objectives, key concepts and cause-and-effect relationships;

5) the richness of the educational process in change - that is, the transition from simple to complex work in a constant sequence, and so on.

We have identified the following main functions of the structure (model) of the organization of the process of practical vocational education based on the above principles:

1) explanatory (informant);

2) a guide (initiator of practical activity);

3) diagnostic (determining the outcome of the process);

4) predictor (providing information on when and where to use the process);

5) evaluator (meaning the results of activities in response to the questions "what to do?", "How to do?", "What was done?") [9].

These functions were carried out by means of information on the content of the educational process and its components (structural-logical system diagrams) and arrows (lines) indicating the relationship between them.

It is determined that the modeling is based on the principle of substitution: in children's activities, the real object can be replaced by another object, image, symbol. The child learns early on the exchange of objects in play, speech, activity. By playing a specific plot in a game, children imitate the relationship between adults, and using what is used as a substitute for the game, they create models that reflect the relationship of real objects [10].

Drawings of children of primary school age are undoubtedly a visual model of the depicted object or situation, and it is no coincidence that many researchers of children's drawings call it schematic, which means that the child draws and schematically (i.e., model) similarities. images used in adult activities ...

Modeling time is more clearly reflected in children's constructive activities. Buildings made by children from building materials and various constructors are three-dimensional models of objects and situations that are then used in the process of role-playing games.

The above facts have drawn the attention of teachers to the development and application of science models in the teaching of primary school age children.

There are three different models in didactics (see Appendix 1).

The first type is an object model in the form of a naturally related object or the physical structure of objects. In this case, the model resembles an object, repeating its main parts, design features, proportions and proportions of parts in space. It can be a flat model of the human figure with movable articulation of the trunk and limbs; bird of prey model, stimulating coloring model.

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The second round-theme-schematic model. Here, the main components identified in the object of cognition and the connections between them are represented using substituting objects and graphic symbols.

The third type is graphical models (graphs, diagrams, etc.).

For a model to function as a visual and practical learning tool, it must meet a number of requirements:

1) clearly reflects the main features and relationships that are the object of knowledge;

2) easy to understand and easy to create and use;

3) bright and clear communication of the features and relations to be mastered;

4) facilitate knowledge.

The analysis of the research shows that the process of introducing models to children of primary school age can be divided into several stages.

The first stage involves mastering the model. As they work with it, children learn how to replace real-life components with traditional characters. At this stage, an important cognitive task is solved - to separate the whole object, the process into its components

components, the abstraction of each of them, the establishment of a working connection.

In the second stage, the topic-specific schematic model is replaced by a schematic. It allows children to bring general knowledge and ideas. The ability to distract from a particular content and mentally imagine an object with functional connections and dependencies is formed.

The third stage is the independent use of mastered models and methods of working with them in the mastered activity. Children of primary school age can use them in cognitive, artistic and aesthetic, labor activities.

The psychological and pedagogical literature identifies several forms of modeling in primary school children:

1) you should start with the formation of spatial relationship modeling - in this case the shape of the model corresponds to the type of content specified in it, then you should move on to modeling temporal relationships, and finally - to modeling other types. relationships;

2) it is expedient to start with the modeling of single specific situations, and then move on to the construction of models with a generalized meaning;

3) it is necessary to start with iconic models by moving to models with a conditional symbolic representation of the relationship;

4) It will be easier to teach modeling if it starts with the use of ready-made models and then their construction is observed.

Simulation training is carried out in the following sequence.

Teacher:

1) invites children to describe new objects of nature with the help of a ready-made model;

2) organizes the comparison of two objects with each other, teaches to identify signs of differences and similarities, as well as gives the panel the task of sequential selection and placement of models that replace these signs;

3) gradually increases the number of comparable objects to three or four;

4) teaches children to model important or significant features of activity (e.g., selection and modeling of plant features that determine the method of dust removal from plants in a corner of nature);

5) Controls the creation of models of elementary concepts such as "fish", "birds", "animals", "pets", "wild animals", "plants", "living", "inanimate" and so on.

Teaching elementary school-age children to model should be related to the use of survey actions. It is also important to teach children to systematically analyze and compare objects or natural phenomena. For example, when comparing two plants, first teach them to study and model the signs of a flower or leaf, then the stem, root. In examining and distinguishing properties, each of them must be called a definite word.

Summary of the lesson "What makes people different from each other".

(for children of primary school age)

Purpose:

creating conditions for children to clarify their opinion that not all people are the same (their gender, age, height, eye color, hair color, they like to do different things, etc.);

to develop comparative skills in children: highlight the necessary signs, differences and similarities (people are similar because their bodies are in a vertical position; they have two legs to move; two arms to help a person perform different movements. People are alive: they eat, breathe, move they grow, etc.).

Preliminary work: a system of self-observation of the peculiarities of children's appearance and the main moments of life, together with the teacher and independent activity. Get acquainted with models that reflect visible differences between people.

Course:

Dunno arrives, greets the children, and mispronounces their names.

World: I haven't been with you in a long time, I've forgotten the names, but you all look the same: their hair and eyes are the same.

Educator: Let's assure Dunno that all people are different, everyone is different from other people.

The children stand freely in a circle so that everyone can clearly see each other.

Teacher: What do you think Dunno should be told to make sure everyone is different?

How are people different from each other? (There are boys and girls, women and men). Assignment: Calculate how many boys and how many girls are in the group.

How are people different again? (Different heights). Assignment: Find something that suits your height. Why did you come together? (Similarly, differences in eye color are identified, and children of the same color are given the task of combining).

I don't know: where should I stay? (The children help Dunno and gather in a circle again).

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I remembered everything. Masha's eyes are green, Dima's are gray. (Calls it wrong). Olya's long hair, Sveta's short hair (again confusing) and so on.

Tutor: It's hard to remember Dunno. There are many children, but he is alone. Let's help him. Each of them uses pictures to point to themselves. Dunno sees and remembers all the children. (Children use pictures that reflect the specific features they see to create portraits. Dunno makes portraits from pictures, children correct it. Several children talk about themselves from the pictures).

Educator: How are people different from each other? Tomorrow is a day off. What do you do? Why did everyone name different cases? People are also different in that everyone has their own hobby.

Dunno: All people are different, why call them the same?

Tutor: How are all the people? (They move with two legs, say they have two arms, a face, dress, etc.).

Dunno: Masha's doll is very similar to a human, she has two arms, two legs, so she is also a human being.

Children's responses are generalized, concluding that man is alive: he moves, eats, breathes, grows. (A model of living characters is used).

From the above, it is clear that modeling is important in teaching children systematic analysis and comparison, which has a great impact on the quality of education in the current context.

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