Principles of Modeling Students in Their Future Professional Activity From Simple to Complex, From Abstract to Accuracy

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ABSTRACT

In this article, the theoretical basis of modeling students in their future professional activities is presented. also quot; in professional activity, the principles of modeling from simple to complex, from abstract to accuracy are theoretically based.

Keywords: Future professional activity, modeling, engineer, designer, constructor, personality activity approach, etc.

Introduction. Currently, the method of modeling is widely used in a variety of modern disciplines: philosophy, humanitarian, natural, technical.

The concept of the model introduced since the Middle Ages, until now, has different interpretations.

From a philosophical point of view, when a model is called, it is the reflection of evidence, items and relationships in a particular field of knowledge in the form of a simple, visionary material structure of one or another sphere[1].

Literature Review. Some researchers believe that the model is a system, its study will serve as a means of obtaining information about another system.

"The Model is a system that is created or chosen by the subject, repeats the aspects that are important for the specific purpose of knowing the subject under study and is in such a relationship with it, replacement and similarity, while studying it will be an indirect way of acquiring knowledge about that subject."

In Model de, it is understood that a system that is imaginatively imagined or materialized capable of changing it by showing or multiplying the research object, while its study provides us with new information about this object[2].

Research Methodology. No matter for what purpose the model was re-designed, the obyekt was interpreted as a material repetition. The obyekt replaced by the Model is called "original", and the model is called "substitute".

From the point of view of pedagogy and methods of physics, the "model"in cognitive activity was viewed as "a substitute for the actual research object, which has similarities in relation to the researcher's interest." In his opinion, there are no such models in nature, but at the same time, if they are used in a relationship of similarity between people, practical or for other purposes, "one can call another a model of any object"[3].

Analysis and results. It is believed that the Model is a substitute object of the studied object, the concept of the model begins to be used in scientific research work, when there is no possibility of DiRECT study of any phenomena or becomes ineffective. Therefore, the subject under study, due to its complexity, it is

necessary to replace it with another, which is simpler and more convenient for research and corresponds to the original.

In the scientific literature, along with the definitions of the concept" model", many types of models are presented. Since the concept of" Model "is inextricably linked with the concept of" modeling", it is impossible to describe it without identifying some features of the model.

At present, the term" modeling " is widely used in scientific research and is interpreted differently.

From a philosophical point of view, modeling is interpreted as a material or imaginary imitation, that is, the demonstration of a natural system in real life through a special project of similarities, in which the principles of organization and operation of this system are repeated.

According to the definition of the structural structure of the method of modeling, "the essence of the method of modeling is as follows: a) when replacing the research object: instead of the phenomenon being considered – the model or the like - the model is drawn to the process of studying the study; b) the similarity of phenomena in the broad sense of the word, including qualitative, quantitative.

"The peculiarity of modeling as a method of scientific knowledge is that the person who set the research objectives before him uses another object that replaces the first one for research, that is, the object that directly interests him"[4].

According to the authors, the process of modeling includes:

– a study of the legalities of objects or processes of nature for a specific purpose;

– research subject;

– model, which mediates the relationship between the chosen object and the selected object, and the following: assignment of the task; selection or creation of the model; research of the model;

– the transfer of knowledge about the model to the original implies a similar one.

Modeling from the point of view of pedagogy and methods of physics is the creation and study of a model, experiment with it.

" Modeling is understood as a specific cognitive method that involves modeling or selecting ready-made models and studying them to obtain new information about the physical objects under consideration, " and the following of its implementation::

Stage I-separation of the subject of modeling;

Stage II - selection or arrangement of another obyekt-model, it gives new information about the science that interested in studying;

Stage III-theoretical or experimental study of the model;

Stage IV-examination, that is, they distinguish the main stages, such as the transfer of knowledge from the model to the original.

They used modeling as the creation and organization of models for the purpose of transmitting data on the similarity of the model to its prototype.

The content of the concept" Model", the classification of many types of models science and technology, there is no single classification of the types of modeling. Types of modeling can be classified according to the basics. For example, the model is classified according to the nature of the objects being modeled by Types, the scope of application of modeling.

Therefore, in this research work, the general structure of the classification of historically developed and frequently used modelling methods: spatial and geometrical; physical; chemical; mathematical; cybernetic; Bionic and biological information; Economic-mathematical and socio-cybernetic; environmental and cybernetic; logical; model experience; conceptual; theoretical; gnoseological are examined on the principle of transition from different accuracy to abstract.

Although different types of modeling are emphasized, it should be noted that they are closely related to each other, the presence of elements in some other species. In this research work, a brief description of some types of modeling and their combined use makes it possible to determine the method of modeling cognitive aspects in the research process. The Model is a substitute for a model in which both the instrument and the object of the experimental study are studied - a special type

of experiment, which differs from the traditional experiment in that the “intermediate part”enters the cognition process.

Modeling in physics is based on similar models, which are used to replicate the properties of one object over a number of characteristics of another according to the criteria established by the theory of analogy.

Conceptual modeling is based on the development and use of models formed by the object in the form of an image reflecting its performance in the process of studying and observing the object[5].

Ososeological modeling “”modeling based on reflection of a piece of reality in human thinking, the determination of models, the legalities between the subyect and the obyect, the replacement of the obyect at the level of conceptual systems and the knowledge of concepts, character systems, and other linguistic expressions."

Summarizing the different views on the concepts of” Model“,” modeling" and based on the research objective, the following were identified in this research work: summarizing the different views related to the concepts of model and modeling and, based on the research objective, the following will be defined in this research work:

1) model is an obyekt in the description, which reflects the basic, the characteristics of the subject under study and can replace it in terms of the problem under study, the study of the first gives new information about the second.

2) modeling - the study of cognitive objects on their models with the aim of explaining them, as well as giving the researcher the opportunity to foresee the cognitive objects of interest.

Definitions given in the scientific literature from “simple”to “complex”, from “mavhum”to “accuracy”ka transition process contradict understanding of modeling. The change in the direction of movement in modeling is associated with the scientific assumption of this research work, according to which the transition from the “simple” model to the “more complex” model is carried out on the principle of adding new research objects to the “accuracy”from "mavhum”taking into account the external omillarni.

Depending on the degree of expression in the model of the properties of the Original object, the models are classified. Based on this classification, models are distinguished: material, materialized and ideal.

Material model-a model whose content directly depends on the characteristics of the original object, in particular, the internal combustion engine or steam turbine model, is understood. The difference of a modeled model from a material model is that its content does not depend on the characteristics of the original object, for example, printed texts, formulas, graphics, drawings, photographs, computer models, etc.

The choice of this classification depends on:

– it should be simple enough to understand, because each group does not have a complex hierarchy of types of models;

– modeled models are separated into separate groups, to a certain extent they can be both material and idealga relevant.

The main stages of the modeling method are as follows: the laying of the problem - the formation of the goal, the selection and analysis of the original object; the model of the object is selected or formed; model research is carried out; the results of the study of the model are analyzed; the interpretation of the knowledge gained in the study of the model

It is considered that modeling skills can be classified as generalized skills.

In the theory and methodology of teaching physics there is a concept of generalized educational skill.

When called skills, it is implied that a person is prepared to perform certain actions according to the set goal, based on the available knowledge and skills. The system of skills includes educational skills, and it is described as the skills that educational skills are formed in the process of learning the basics of Science and are necessary for the successful study of these fundamentals.

The concepts of” general education skills “and” generalized skills " are distinguished, when they are called general education skills,

they refer to skills that are specific to all educational sciences or that are specific to a particular period of subjects, and generalizations are defined as a category of skills that are flexible in their characteristics, easy to pass to new conditions[6].

It is noted that generalized skills are formed by understanding the scientific basis and structure of the activity and applying the appropriate techniques under clearly defined conditions.

Conclusion. Thus, when modeling skills are called-to put the issue, to set the goal, to select and analyze the original object; to choose or form the model of the original object; to study the model; to analyze the results of the study of the model; to interpret the knowledge acquired in the study of the model for the original object; as generalized skills, in the

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