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MODEL OF DEVELOPMENT OF INFORMATION-MODELING SKILLS IN FUTURE ENGINEERS

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Annotatsiya:
Ushbu maqolada texnika ixtisosligi talabalarida axborot-modellashtirish ko‘nikmalarini rivojlantirish uchun yaratilgan model va uning muhim jihatlari haqida ilmiy fikr mulohazalar berilgan.

Keywords: model, information-modeling skill, procedural component, goal block, active approach, analytical-modeler.

Аннотация:
В данной статье приводятся научные мнения о модели и ее важных аспектах, созданных для развития навыков информационного моделирования у студентов технических специальностей.

Annotation:
In this article, scientific opinions are given about the model and its important aspects created for the development of information-modeling skills in technical students.

Калит сўзлар: model, ахборот-моделлаштириш ko‘nikmasi, protsesual komponent,maqsad bloki, faoliyatli yondashuv, tahliliy-modellashtiruvchi.

Ключевые слова: модель, умение информационного моделирования, процедурный компонент, целевой блок, активный подход, аналитик-моделист.

Currently, it is established that information technologies are an effective organizational part of the modern specialist's activity. This technique shows the need to create an innovative procedural-activity model for the formation of information-modeling skills in students in the educational space of higher education institutions.
All of the above allows us to talk about the need to create a model of information modeling skills, which should include the following elements: purpose, approaches, components, tool, method and results. The concept of "model" is used in almost all fields of science, and based on the analysis of scientific literature, it is based on the

existence of types of models that complement each other. This concept is noted in the philosophical dictionary as the one that has the same characteristics as the original, reflects or repeats the object of research in the process of research or knowledge.

The modeling method is described as a type of auxiliary tool that works in real or abstract form and defines the main - internal and external functional relations of the object. Modeling helps to maintain the integrity of the studied object, its structure, connections, and operation at all stages of the research.

The set of requirements for a professional engineer creates a certain ideal image and allows him to develop a procedural-activity model for the formation of professionally relevant information modeling skills.

The goal setting component of the model - reflects the purpose of the research based on increasing the effectiveness of preparing students for professional activities.

"The scientific-theoretical basis of the model is the following - active, environmental and resource approaches.

The active approach is manifested in the gradual involvement of future specialists in the process of conscious application of information technologies in activity modeling, the development of independence of future engineers and their readiness to make professionally important decisions in the use of information technologies.

It includes acquisition by students not only of knowledge, abilities, skills, but also practical experience to form skills of professional and social importance. The educational technologies used should be aimed at mastering knowledge and mastering the skills and experiences of professional activity.

Procedural component. It includes the following stages of model development and implementation, including information technologies, during the career of future engineers. (TMF- Student independent activity.)

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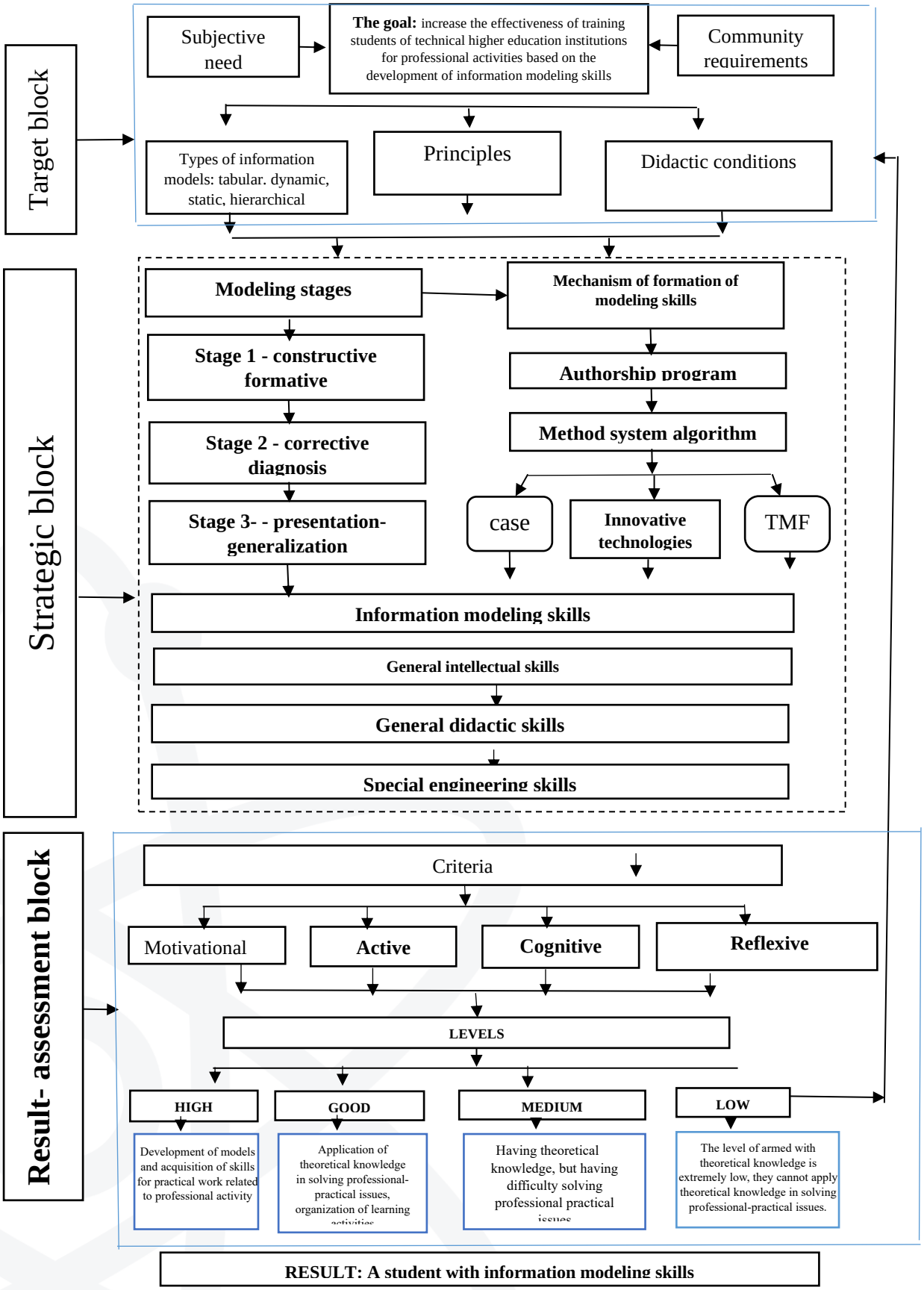

Figure 1. Model of formation of information modeling skills in students

"The first stage is conceptualization and problematization. It includes the search and consideration of an actual problem, the study of issues of its development in science and practice. Students collect information on all aspects of solving the specified model tasks, the results of research in this field, the opinions and conclusions of researchers-experts, identified contradictions and threats, mainly on the Internet.

To implement this stage, future engineers should have effective methods of searching for information, get the target of the necessary information, and have the ability to rationally choose the necessary materials for different models.[4]

The second stage is the analytical-modeling stage. In it, the important points of the problem are distinguished, the tasks arising from them are formed. The information obtained at the initial stage is systematized in the form of tables and diagrams. Students came up with ideas to solve the problem, and the most effective form of discussion was Brainstorming. At this stage, the strategies for creating the model, its direction are developed, the participants are identified, the conditions for success are determined, and the results are predicted. For this stage, students should have knowledge and skills to work only with operating systems, general software, integrated software systems; Familiarity with digital methods of solving professional problems is typical.[3]

Methods of using tools in information modeling allow the specialist to create professional situations as accurate as possible. For example, the modeling method and the case method allow modeling a production situation or problem; development of a mathematical model of technological processes and objects allows to analyze their characteristics, optimize and control them.

Modeling is one of the main methods of knowledge and a form of reflection of reality. Its essence is to identify or reproduce any features of real events, objects, processes and describe them abstractly in the form of images, schemes, algorithms, etc.

We created a model of the process of developing students' information modeling skills, consisting of three blocks: goal block, strategic block and result block. We will dwell on the content and components of these structural blocks, and their interrelationships.[5]

The goal block is the main starting point of the process model, and further blocks are organized based on this goal. "When defining the purpose of the model, the needs of the main subjects of the process of forming information modeling skills in students (acquiring information modeling skills, the need to use them, requirements for acquiring this skill in practical activities, etc.) and the requirements of society (information the development of communication technologies, the needs for the skills of using ICT in professional activities, the requirements determined on the basis of

the ability to widely use the possibilities of increasing work efficiency). Based on these two factors, we determined the goal of the model as "Increasing the effectiveness of training students of technical higher education institutions for professional activity based on the development of information-modeling skills"In addition, this block provides information on the methodological support of achieving the model's goal. In particular, information on the types of information models - tabular, graphic, dynamic, static, hierarchical, and network. " These models are widely used in the work of future engineers, and in preparation for this process, students are introduced in detail to each type of model and the experiences of working with them.[3]

The principles used in preparing technical students for information modeling activities are as follows:

"the principle of coordinating the integration of activities;

the principle of self-development of students;

the principle of social responsibility;

principle of social competence;

the principle of continuous development;

balancing principle;

the principle of mobility in the use of information. The following didactic conditions are required for preparing students for information modeling activities:

integration of methodical, informative and modeling activities of students and teachers into a single didactic system;

including stages of solving professional issues based on information technologies in the information-modeling activity of students;

implementation of an interactive opportunity between the subject and ICT for collecting information, processing it, processing it, transmitting it, modeling it;

presentation of educational materials used in the educational process by means of animation, video, etc.;

modeling of module programs, technical and audiovisual means of teaching, which condition the integrity of methodical, informational and subject areas of information-model preparation.

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