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THE STRUCTURE OF DESIGN-INVENTIVE COMPETENCE AND METHODOLOGICAL FEATURES OF ITS DEVELOPMENT

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Annotatsiya : Maqolada Texnologiya fanida ixtorochilik va loyihalashirishni amaliyotda o'rgatish va innovatsion yangiliklardan foydalanib turli hil yangiliklar yaratish va u bo'yicha izlanishlar olib borish.

Kalit so'zlar: Texnologiya. Innovatsion texnologiyalar. Muammo. mas'uliyatlilik, ijtimoiy faollik, muloqatchanlik, moslashuvchanlik, kompotentlik, pedagogik voqelik.

ANNOTATION: The article discusses the practical teaching of invention and design in the field of Technology, and the creation of various innovations using innovative innovations and conducting research on them.

Keywords. Technology. Innovative technologies. Problem. Responsibility, social activity, communication, flexibility, competence, pedagogical reality.

АННОТАЦИЯ В статье рассматриваются вопросы практического обучения изобретательству и дизайну в области технологий, а также создания различных инноваций с использованием инновационных нововведений и проведения их научных исследований.

Ключевые слова. Технология. Инновационные технологии. Проблема. Ответственность, социальная активность, коммуникация, гибкость, компетентность, педагогическая реальность.

The education sector plays an important role in achieving the ultimate goal of the comprehensive reforms being implemented in our country, and in this process, the effectiveness of the system of retraining and advanced training of personnel, which is a component of the National Personnel Training Model, sets the task of increasing the efficiency of the activities of advanced training institutions based on modern requirements. In the process of technological education, the following are important in developing students' design and inventive competence (pedagogical process):

Consistent perception of pedagogical reality; orientation to the field of science; Mastery of pedagogical and information technologies; ability to organize interpersonal communication; ability to receive, process and use information in one's own science, field of activity; ability to convey educational information to others; requires a certain level of formed worldview.

"In the process of improving the quality of education, the competence of a modern teacher, which has a new content and essence, is imbued with a sense of creativity and striving for creativity. A modern teacher must ensure the quality and continuity of education and constantly improve his professional level and qualifications, continuously improve the educational process based on the use of innovative technologies, and be inclined to solve professional problems." The development of design-inventive competence in the process of technological education is carried out in the didactic process, the following are followed:

. planning, organizing activities, and approaching them creatively;
self-expression, the ability to analyze the situation;
social interaction with participants in the process; constant work on oneself;
assessing the situation and solving problems, acquiring management skills, etc.

. Project planning is based on a slightly different scheme. It highlights 5 main stages:

1. Defining tasks and writing them down as a list. In some cases, managers make the mistake of not listing all the processes at once. To eliminate this phenomenon, it is recommended to use the sequential decomposition method in the process of determining the upcoming work.

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2. The procedure and duration are determined for each selected position. For this, the decomposition technique is also used, supplemented by expert assessments. This allows you to accurately determine the planned duration of each operation.

3. Determines the type of resources and their availability. This can be finance, materials, labor, information, etc. The schedule of work performed is related to the schedule of material and technical support, financing, etc. All stages form an interconnected continuous process. This prevents interruptions in the production process. At the same time, scarce resources require separate consideration. They largely determine the duration and sequence of the entire spectrum of future work.

.4. Cheklovlar tashqaridan o‘rnatiladi. Bularga ishlab chiqarishning mavsumiyligi, asbob-uskunalarni ishlab chiqarish qobiliyati va boshqa tashqi omillar kiradi.

5. Loyihalarni boshqarish jarayonida yuzaga keladigan xavf-xatarlarga javob beradigan tizim yaratilmoqda. Loyihani rejalashtirish ularni tahlil qilishdan boshlanadi. Eng ehtimoliy va xavfli tahdidlarga tegishli javob choralari ishlab chiqilmoqda.

Project planning is a responsible task. The structure must be carried out correctly. It is based on the following: the duration of the project being created, the features of the structure of departments, the components of the result that will be obtained after the completion of the project, the functional elements of the process, the company's work, and the geographical location of the facilities. The structure of inventive competence

The formation of inventive competence in students is carried out on the basis of an integrative structure and consists of the following main components:

1. Motivational-value component

This component serves to form the student's:

interest in inventive activity; need; system of professional values. Methodological features: creation of problem situations; assignment of tasks based on real-life and production problems; analysis of the experience of inventors and innovators; encouragement directed towards project activities.

2. Cognitive (knowledge) component Covers students': technical and technological knowledge;

design and design basics; knowledge of innovation processes. Methodological features: integrative learning (STEAM, interdisciplinary connection);

modular learning; problem-based learning; use of case studies and analytical tasks.

3. Practical-operational component

Represents the skills and competencies of the student to practically perform inventive activities: identifying a problem;

developing an idea; creating a model, layout or prototype; proposing a technological solution. Methodological features: project-based learning (Project Based Learning);

design thinking (Design Thinking); laboratory and practical exercises; technical creativity exercises.

4. Creative-innovative component

Develops the student's: creative thinking; ability to find non-standard solutions; ability to create innovations. Methodological features: elements of brainstorming, SCAMPER, TRIZ; creation of a free creative environment; comparison of alternative solutions; independent and collective creative work.

5. The reflexive-evaluation component is related to the student's: analysis;

evaluation; striving for improvement of his/her own activity.

Methodological features:

reflexive questions;

portfolio method;

self-assessment and peer assessment;

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protection of project results. The methodology for developing inventive competence should be organized in a way that combines the motivational, cognitive, practical, creative and reflective activities of students.

In the formation of this competence, project-based education, design thinking, problem-based and integrative teaching methods give effective results and increase the readiness of future specialists for professional activity. Design is the process of creating and drawing projects for the construction and creation of intended objects (apparatus and devices, buildings and structures, roads and bridges, machines and equipment, aircraft and spacecraft, radios and televisions, telephones and computers, new types and samples of clothing and footwear, furniture and other various products). It is used in all areas of science and technology. It includes scientific research, economic and technical calculations, estimates, drawing and reproduction of drawings, often based on drawings, a model of an object (building, machine, etc.). An object can be designed individually (individually) and in a typical manner (in bulk). special organizations, firms or groups carry out work in specific areas or in a specialized manner. An object is widely used in the design of standardized parts, assemblies, units and regulatory documents. . Design is the process of drawing up and drawing up projects for the construction and creation of intended objects (apparatus and devices, buildings and structures, roads and bridges, machines and equipment, aircraft and spacecraft, radios and televisions, telephones and computers, new types and samples of clothing and footwear, furniture and other various products). It is used in all fields of science and technology. It includes scientific research, economic and technical calculations, estimates, drawing up and reproduction of drawings, often based on drawings, a model of the object (building, machine, etc.) is prepared. An object can be designed individually (individually) and in a typical (massive) manner. It is carried out by special organizations, firms or groups. They operate in industries or in a specialized manner. Standardized details, assemblies, units and regulatory documents are widely used to design an object.

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