

# *Innovative Technologies In The Formation Of Professional Skills And Abilities Of Students Of Technical Universities*

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**Abstract** – In the statues, the technical direction of the study in the subject of "Materials Science" is considered the conditions of application "Between the connection of objects" and also the application in the process of studying the subject is described.

**Keywords** – Didactic Conditions, Teaching Principle, Methodical Function, Educational Function, Developmental Function, Educational Function, Constructive Function.

## I. INTRODUCTION

At present, the organization of the educational process in higher education institutions with the use of new educational technologies remains a topical issue. Because the use of innovative technologies by the state is important for the successful implementation of the reform program in higher education.

As a result of the application of innovative technologies in the educational process in technical higher education institutions, along with the development of students' cognitive characteristics, the ability to apply the knowledge and skills acquired in their professional activities also develops. The purpose of organizing the educational process in a modern higher education institution should be to stimulate the formation of the student's need for independent acquisition of knowledge and skills, as well as to help them increase their knowledge in their specialty. In the learning process, it is necessary to ensure that the student acts not as an object of pedagogical influence of the teacher, but as an active subject of teaching. Research shows that the application of new information technologies in the educational process helps the student to form an active subject position, develop cognitive abilities, increase knowledge.

## II. ANALYSIS AND RESULTS

It is necessary to develop natural-scientific components in technical higher education institutions, ie to take into account that sciences such as physics, chemistry, mathematics, which serve as the basis of professional training, serve as a systematizing factor in the cognitive development of the individual. It is known that the knowledge acquired in general education institutions in the above disciplines is a natural-scientific component of general and vocational training.

Ensuring connectivity in the integration of natural-scientific and professional knowledge means understanding the improvement of physics and chemistry courses, that is, helping the student to systematize their existing knowledge of the laws of

nature and to form a position of activity. This, in turn, develops the ability to master science through understanding and to apply existing knowledge and skills in a variety of contexts, in short, to apply existing knowledge to professional activities.

One of the innovative technologies in higher education is a modular-rating teaching system. The basis for the use of modular-rating system in teaching is an effective system of monitoring the knowledge acquired by the student. The formation of the subject into modules allows to redistribute the time allocated for certain types of teaching process in the curriculum, which provides for an increase in the rate of independent work of students.

The module-rating training program of a certain subject should be aimed at improving the knowledge, skills and abilities necessary for the professional activity of the future specialist. When designing the program, it is necessary to pay attention to the formation of the following features in students:

- Gnostic (ability to analyze the reasons for success or failure in the learning process, good knowledge of science, to find and use the necessary literature)

- Designer (ability to set goals for admission to higher education, to make plans, to develop methodological and normative documents.)

- Communicative (ability to formulate questions that clarify a given problem, to ask questions to teachers and friends, to compose logically complete messages)

- Constructive (ability to divide the text of a topic into logical parts, to prove the correctness of the idea, to choose methods of self-control)

- Organization (ability to actively participate in various activities, to organize a certain sequence, systematization in the learning process).

- Speech ability (formation of written and oral speech in the student, ie speech is closely related to thinking)

Ability to distribute attention (the student is able to focus and distribute attention to the essence of the topic during the analysis of each topic)

It is recommended that each module in the teaching of materials science consists of the following 4 blocks:

- 1) Information block;

- 2) Executive (auxiliary) block;

- 3) Methodical block

- 4) Control block.

The data block consists mainly of theoretical materials (lecture texts, literature for relevant information). When creating a data block, it is recommended to use a tabular form that represents the specification of learning elements and concepts, terms, that is, long texts should be avoided. That is, the base text should look short and concise. The basic text can also be a visual expression of an idea of the main content of the study material. The basic text consists of one or more 2-3 pages, mainly pictures, some basic words and phrases, formulas, in which certain information should be hidden. By memorizing these pictures, symbols (words), the student reveals the hidden information and makes it easier to remember it.

In order for a student to acquire knowledge, that is, to learn through comprehension, they must also perform practical exercises. To do this, an executive (auxiliary) block is added to the training module. In this block, the student can do labs, practice sessions, or solve problems.

The sum of both blocks above makes up the educational content.

The methodical block provides the student with information on recommendations and sources of information for independent study of the material.

The theoretical block is poured into the learning module to determine the level of knowledge, skills and abilities formed in the student and together with the methodical block serves to manage the interaction between teacher and student in the learning process of the module.

### III. CONCLUSION/RECOMMENDATIONS

It is recommended that each student take an entrance test before beginning the study of the module. At the same time, the student's basic knowledge (learned in physics, chemistry) is activated and based on them new knowledge and skills are formed. The student who successfully passes the entrance control receives the next necessary information and executive blocks.

The module learning process begins. The teacher plays the role of a consultant in the process, conducts classes on the main problem, enriches the training.

The following table illustrates the relationship between the topics of Physics and Chemistry in secondary schools and the topics covered in the specialties of further education in the coverage of the topic "Properties of Metals" in Materials Science.

| Physics                                                                                                                 | Chemistry                                                                                                            | Materials science    | Deformation processing of metals by casting           | Technology of liquefaction of secondary materials                                                                                                     | cutting theory and tools.                                                                       |
|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| About the structure of matter. density and its units. Crystalline and amorphous bodies Mechanical properties of solids. | Properties of metals and their dependence on the periodic table. Solid alloys of metals and intermetallic compounds. | Properties of metals | Properties of metals in pressure treatment of metals. | Properties of metals in the production of castings. Thermophysical properties, mechanical properties, properties related to the gas exchange process. | Plastic deformation of metals. Refinement Technological properties. Cross-workability property. |

## References

- [1] Kenjaboev S. The Study Of The Effect Of The Parameters Of Elastic Coupling On The Hacker Of Motion Of The Rocker Arm Of The Crank And Beam Mechanism //Textile Journal Of Uzbekistan. – 2019. – T. 2. – №. 1. – С. 102-107.
- [2] Kenjaboyev S. S., Ljurayev A. Kinematic Characteristics Of The Crank And Beam Mechanism With Composite Kinematic Pairs //Scientific-Technical Journal. – 2018. – T. 22. – №. 1. – С. 42-47.
- [3] Djuraevich D. A., Sharipovich K. S. Kinematic Analysis Of The Four-Link Lever Mechanism In Accordance With The Limits Of Elastic Elements In Sharnir //European Science Review. – 2018. – №. 5-6.
- [4] Kenjaboyev S. S., Ljurayev A. Kinematic Characteristics Of The Crank And Beam Mechanism With Composite Kinematic Pairs //Scientific-Technical Journal. – 2018. – T. 22. – №. 1. – С. 42-47.
- [5] Кенжабоев Ш. Ш. И Др. Обучение Материаловедения Как Специальных Предметов Для Бакалавров Транспортных Направлений //Современные Автомобильные Материалы И Технологии (Самит-2020). – 2020. – С. 162-166.
- [6] Негматуллаев С. Э., Кенжабоев Ш. Ш., Бекмирзаев Ш. Б. У. Особенности Межпредметных Связей При Изучении Общепрофессиональных Дисциплин //Российские Регионы Как Центры Развития В Современном Социокультурном Пространстве. – 2020. – С. 71-75.
- [7] Джураев А. И Др. Кривошипно-Кулисный Механизм. – 1995.
- [8] Джураев А., Исохожаев Б. М., Кенжабоев Ш. Ш. Кулисный Механизм. – 1993.
- [9] Кенжабоев Ш. Ш. Разработка И Обоснование Параметров Кулисного Механизма С Гибким Звеном. – 1994.
- [10] Елеусинова А. Е. Анализ Динамических Внутренних Упругих Усилий И Перемещений В Элементах Пространственных Механизма Высокого Класа С Трениями В Кинематических Парах //Ббк 32.973 А 43. – 2015. – С. 178.
- [11] Кенжабоев Ш., Турдалиев В., Абдуллажонов А. Инновационная Конструкция Ременной Передачи Для Приводов Технологических Машин //Перспективы Интенсивного Подхода К Инновационному Развитию: Сборник Материалов Международной Конференции.–Наманган: Издательство «Намити. – 2018. – С. 351-352.
- [12] Балашов С. В. И Др. Использование Методик Интерактивного Обучения.