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USING MODULAR EDUCATIONAL TECHNOLOGY IN CHEMISTRY

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Abstract:

This work presents material on the use of modular teaching technology in chemistry. Developmental technologies arouse students' interest in science, help activate educational and cognitive activities that help creative perception and assimilation of knowledge. The transition to developmental educational technologies makes the student not only a self-educated subject, but also one who knows the mechanism of self-education, is interested in self-development, and ensures that he becomes a capable person. Science teachers can use this material to create a modular science program.

Keywords: modular training, educational technology, interactive training, chemical education, pedagogical modular, training modules, individualization of training, active learning methods, independent work of students, effectiveness of training, distance education, problem-based education, chemistry teaching methodology, development of critical thinking, academic achievements.

Introduction

Today, in the new history of our country, the use of innovative technologies in the implementation of the requirements of the "Law on Education and the National Personnel Training Program", which lays the groundwork for the construction of a new Uzbekistan, improving the methodological quality of educational technology in teaching, Improving the efficiency of learning and introducing new methodological elements in this process play an important role in preparing a competent generation [1,2].

Currently, it is required to introduce the modular technology of teaching, which is one of the modern technologies of teaching.

The essence of the technology of modular teaching (a module is a whole functional network, which combines the learning content and technology into a single target system) is that the pupil or student himself or herself is able to acquire knowledge in the process of working with the module independently or with a little help from the teacher. is to achieve its goal [3].Teaching in chemistry classes based on the module system determines the preparation of the teacher for the traditional lesson, the resources related to the topic and their logical connection and schematic view.In this case, students take the subject for granted, but this way does not ensure creative development in the student. Currently, teachers working on themselves

use innovative pedagogical technologies in the field of education. In our work, we chose the module teaching method. This is a new pedagogical technology in education [4].

Thus, the principle of the module reading technology is that the students' level of knowledge can meet the state educational standards and have higher knowledge.We present a version of this type of module on the topic "Summarization of information on the most important classes of inorganic compounds" for students of the 8th grade at the 34th general education school of Samarkand city. During this modular lesson, we divided the students into 3 groups of 7 students, each group included medium and good mastering students and 1 strong student. This means that in the process of work, a strong student helps weak students and strengthens his knowledge.

Modular plan:

Summarizing information on the most important classes of inorganic compounds.

Module 0. Comprehensive didactic objectives.
Module 1. Oxides.
Module 2. Basics.
Module 3. acids.
Module 4. Salts.
Module 5. Genetic connection between classes of inorganic compounds.
Module 6. Practical exercise "Solving practical problems".
Module 7. Test

Complex didactic objectives.

1. Systematization and generalization of knowledge about oxides, bases, acids and salts, especially:
   a) The principle of achieving full mastery of the nomenclature of given class combinations;
   b) Familiarity with the different classification of compounds of each class;
   c) Using laboratory experiments, to achieve the study of physical and chemical properties of oxides, bases, acids, salts, as well as methods of their production;
   d) Familiarity with the use of some of the substances of the given class in the national economy, industry, and life.
   e) To make sure that there is a connection between substances of different classes of inorganic compounds;

2.Developing chemical knowledge, mainly learning to draw up the chemical formula of oxides, bases, acids, salts and naming some representatives, proving the properties of substances of this class using chemical equations, explaining the meaning of chemical formulas and equations;

3. The ability to master the technique of conducting chemical experiments and formalize the observed results;

4. Learning to evaluate oneself and one's peers.

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Module 1
Oxides
Structure of the module.
1. Determination of didactic goals;
2. Composition of oxides, naming;
3. Classification of oxides;
4. The main methods of obtaining oxides;
5. Properties of oxides;
6. Use of oxides;
7. Conclusion;
8. Control;

Determination of didactic goals.
1. Identification, composition and naming of oxides;
2. Familiarity with various classifications of oxides;
3. Determination of methods of obtaining oxides;
4. Using laboratory experience, achieve the study of physical and chemical properties of oxides;
5. Familiarity with the use of oxides;
Composition and naming of oxides.

Partial didactic goals:
1 Repeat determination of oxides;
2. Remember to make the formula of oxides;
3. To strengthen knowledge on the naming of oxides;
The use of modular teaching technology in the teaching of chemistry increases the effectiveness of the lesson. It increases the interest of students in science, makes them work more independently, use time effectively, think, draw conclusions about the completion of completed work, and self-esteem.
- provides an opportunity to control oneself, to see one's own knowledge and skills, to determine the level of acquired knowledge.

Results of traditional education							Results of modular training				
Group	Number of students	Grades			Quality indicator %	Absorption %	Grades			The quality is indicative what %	Absorption %
		5	**4**	**3**			**5**	**4**	**3**		
8A	29	9	12	8	72,4	100	10	14	5	82,7	100
8B	26	21	3	2	92	100	22	3	1	96	100
9A	32	9	12	11	65	100	11	14	7	78	100

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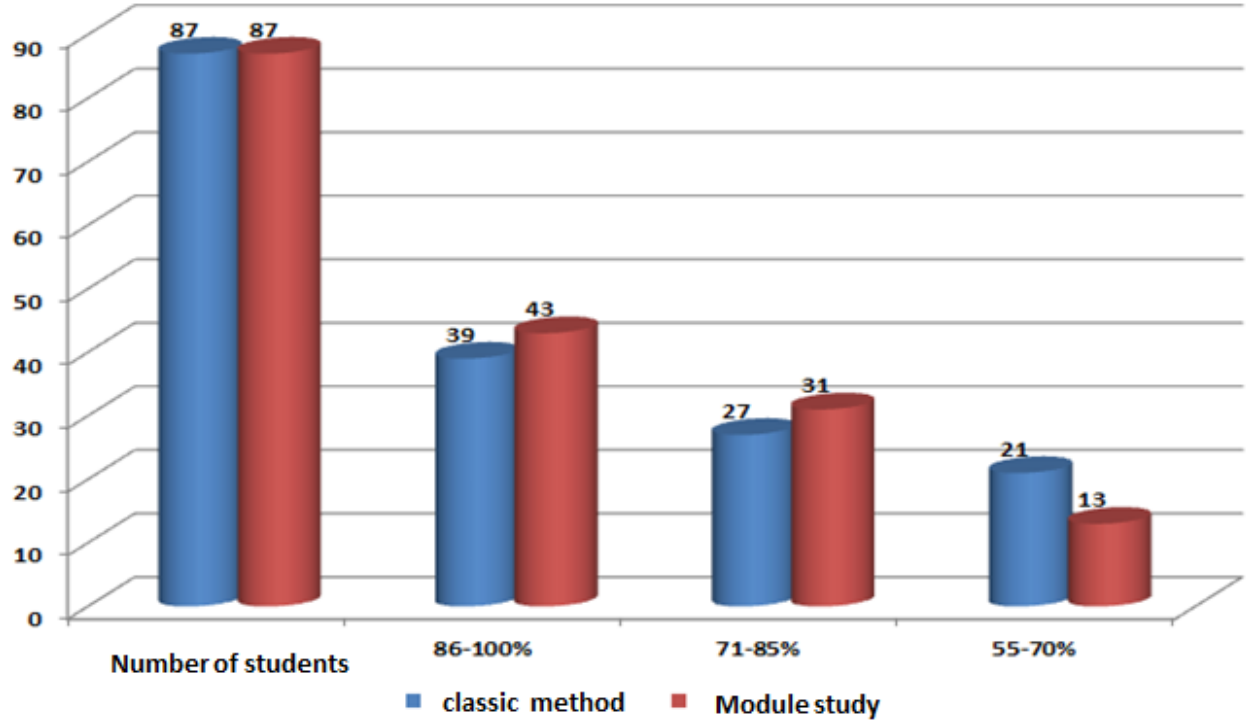

The results of the analysis of the mastering of students of the 34th grade of the Samarkand city general education school showed that the use of modular technology in teaching increases the effectiveness of the lesson. For example, in class 8B, the quality indicator when using traditional educational technology is 72.4%, and when using modular technology, the quality indicator is 82.7%, or "5" and "4" in general. It can be observed that the number of students studying for the grade has increased, which means that the use of modular technology in the teaching of chemistry greatly increases the effectiveness of the lesson compared to the traditional teaching technology. This technology reduced the sequence of students' activities, increased their mastery of the given material to 100% depending on their individual ability, and increased its efficiency to 87%.

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