

METHODOLOGY OF DEVELOPMENT OF INDEPENDENT LEARNING SKILLS IN FORMING THE CONCEPTS OF INORGANIC CHEMISTRY

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Abstract. *The article presents the advantages of using the credit-module system in the most developed countries of the world and analyzes its use in teaching subjects in the educational system of the Republic of Uzbekistan. Scientific conclusions and proposals were given on the scientific and practical basis of research and analysis. The advantages of teaching in the credit-module system are described, and scientific and methodological recommendations are given. The organization of the educational process from the credit-module system increases the level of independence of students and increases their motivation through successful training in ways of solving problems in achieving specific goals and solving the problems of future professional employment, for them self-awareness opens up additional opportunities for The credit-module system is aimed at independent education of students, determines the amount of knowledge in the form of credit, creative acquisition of knowledge based on individual and team work, and the choice of an educational path with a strict determination of the educational process. and a single unit that measures the amount of scientific work of a student and a teacher.*

In this article, the creation of the credit-module system, its advantages, its content, forms of personnel training, expected results from the system, step-by-step transition to the credit-module system in Uzbekistan, conditions and directions, inorganic chemistry in higher education institutions on the example of science, the importance of developing students' independent learning skills in the credit-module system is stated.

Keywords: *higher education system, competence, inorganic chemistry, motivation, educational technologies, credit-module system, independent education, independent work, basic independent education, additional independent education, independent education in classroom classes lim, independent study outside classroom classes.*

INTRODUCTION

We consider it our first priority to improve the activities of all parts of the education and training system based on today's requirements. Sh.Mirziyoev.

The importance of developing a culture of independent thinking in determining the development of the country and its socio-economic, national-cultural position and prospects in the development of world education is incomparable. The basis of the success of the higher education system of developed countries (Harvard University in the USA, Cambridge University in the UK, The Australian National University in Australia, Tsinghua University in the PRC, etc.) is determined by the development of the competence of independent activity in the trained personnel. Competence of independent learning serves to develop students' independent self-development and increase the efficiency of professional activity. Vocationally oriented teaching of "Inorganic Chemistry" in higher education institutions, development of effective technologies for development of independent cognitive activity of students is gaining urgent importance. In the

higher education system of the developed countries of the world, a number of scientific researches related to the development of educational technologies for the formation of students' motivation for independent learning, the development of analytical and critical thinking skills are being conducted. As an important mechanism for ensuring the professional socialization of future specialists, the issues of determining the trajectories of independent education, strengthening the role and effectiveness of independent work of students in the development of acmeological competence, and developing the synergistic model of the individual in the process of acquiring qualification requirements are gaining importance.

Ensuring the mobility of higher education in our republic, improving the personnel training system taking into account the real sectors of the economy, expanding the opportunities for independent education based on advanced foreign experiences, developing pedagogical mechanisms for the effective use of information, communication and digital technologies. importance is being paid. In the Action Strategy for further development of the Republic of Uzbekistan, the tasks of "continuing the continuous improvement of the continuous education system, increasing the possibilities of quality education services, and training highly qualified personnel in accordance with the modern needs of the labor market" are defined. This requires the improvement of the organizational and methodological support of organizing independent education of students in the process of teaching the science of "Inorganic Chemistry".

LITERATURE ANALYSIS AND METHOD

Decrees of the President of the Republic of Uzbekistan No. PD-4947 of February 7, 2017 "On the Strategy of Actions for Further Development of the Republic of Uzbekistan", No. PD-5847 of October 8, 2019 "On approval of the concept of development of the education system until 2030" "Higher Education of the Republic of Uzbekistan Decree", PD-2909 of April 20, 2017 "On measures for further development of the higher education system", PD- of July 27, 2017 Decision No. 3151 "On measures to further expand the participation of economic sectors and branches in improving the quality of training of highly educated specialists" and other regulatory legal documents related to this field, this scientific research to a certain extent serves.

DISCUSSION

Although views of theoretical importance have been put forward regarding the general aspects of organizing independent education based on modern educational technologies, the educational and information system that is the basis for independent education in the credit-module system and methodological support, the organization of independent education based on modern pedagogical technology and the problems of developing the student's independent learning skills have not been researched as a separate research object.

When analyzed on the basis of research, it is important to develop students' independent learning skills in the credit-module system in the example of "Inorganic Chemistry" in higher educational institutions of pedagogy. The credit education system is a form of organization of the educational process, which allows students to determine their own educational trajectories within certain limits, is aimed at encouraging independent and creative learning, the amount of acquired knowledge is measured in credits .

Encouraging students to study independently in the credit-module system is a work allocated to independent education on topics, providing educational-methodical literature and recommendations, tests, supervision in the form of colloquiums, abstracts, statements and reports. will be done. Organization of chemical education is a complex process, and its quality and effective

implementation depends on many factors. First of all, teaching methods and methods, tools and teaching technologies, organizing the work of a chemistry teacher on a scientific basis, organizing lessons and extracurricular activities according to the purpose, controlling, monitoring and evaluating students' knowledge. correct assessment, complete formation of oral and written chemical speech are the main goals and tasks of chemistry education. It has been determined that the science of inorganic chemistry is greater than the number of all inorganic substances. It consists in improving the methodology of developing students' independent learning skills in the process of teaching the science of "inorganic chemistry".

The main tasks of the study:

- based on the characteristics of higher educational institutions, to study the state of organization of independent education of students in the teaching of "Inorganic Chemistry" and to analyze its specific aspects;

- Clarification of the place, essence, ways and means of organizing the student's independent education and independent work as an example of vocationally oriented teaching of inorganic chemistry;

- to demonstrate the importance of designing chemistry training sessions in the effective organization of student independent education and to develop a model for designing training sessions in "Inorganic Chemistry" based on this;

- clarifying the conditions for the development of the organizational and methodological support of independent education and improving the methodology of organizing independent education of students in "Inorganic Chemistry" on this basis.

RESULTS

In the credit-module system, independent education can be divided into basic and additional parts in order to individualize the educational process in inorganic chemistry.

Basic independent education means the student's preparation for all classroom lessons and control-testing activities included in the curriculum of the subject. Its result is manifested by the active participation of the student in the current training with control assignments, tests, oral-speech and other forms of current control work.

The basic forms of independent education are as follows:

- lecture materials on science, writing it and studying textbooks;
- search, review and study literature and electronic information sources on the subject;
- performing homework tasks given in practical and laboratory exercises;
- studying the material allocated for independent education;
- preparation for practical training;
- preparation for supervision work or colloquium;
- preparation for certification and exams, etc.

Additional independent learning focuses on strengthening, deepening and analyzing the knowledge and skills of the student on the subject. They consist of:

- graphic works; - creating a project; - course work; - research work; - participation of students in scientific-practical conferences, seminars, Olympiads; - analysis of scientific sources specified by the teacher; - writing essays, abstracts, etc.

There are two types of independent education in the educational process of higher education institutions:

independent learning in classrooms and outside of classrooms.

Independent learning in auditorium classes - as a rule, it is carried out under the instruction and control of the teacher during the lessons, but without his direct support.

Types of independent education performed under the supervision of a teacher in auditorium classes mainly consist of the following forms:

- Compilation of cases, problematic situations, solving problems in the field of chemistry
- performing practical and laboratory assignments;
- team practical games related to the topic and others.

Independent learning outside the auditorium - education carried out by the student without direct support of the teacher according to the teacher's instructions.

It is mainly implemented in the following forms:

- Mastering the content of the lecture and forming it based on the educational resources recommended by the lecturer (information and educational resources, electronic literature).
- Writing abstracts and essays on interesting and relevant topics of chemistry;
- Preparation for practical training;
- In-depth research of scientific and methodical literature, etc.

CONCLUSION

Requirements for students' knowledge, examination of students' knowledge and skills, monitoring of student performance, oral questioning, testing, written control works, method of composing and solving test questions in chemistry and other modern methods at different stages of education and the ability to use technologies serves to acquire knowledge and skills of students. The analysis shows that the priority of independent learning is that the student regularly consults with the teacher, meets for subject and subject guidance and topic discussion, as well as to evaluate the student's progress. face-to-face communication with the teacher allows the student to process information on himself and learn in a different environment.

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