

Credit-Modular System of Education: Problems of Structuring Individual Educational Trajectories of Students

Khurshida Pardaeva

Senior Lecturer, Department of Biology and Methods of Its Teaching, Jizzakh State Pedagogical University, Uzbekistan

Abstract The article examines the issues of introducing individual educational trajectories into the educational process as one of the requirements of the credit-modular system in teaching biological disciplines, since in the context of the modern transition to the credit-modular system, one of the urgent tasks is the individualization of the content of education, ensuring flexibility and variability of educational trajectories taking into account the professional interests and desires of students.

Keywords Credit-modular system, Individualization of educational content, Educational trajectories

1. Introduction

The credit-modular system is a model for organizing the educational process based on the unity of modular learning technologies and ECTS credits as units of measurement of a student's academic workload necessary for mastering content modules. According to the "Concept for the Development of the Higher Education System of the Republic of Uzbekistan until 2030", approved by the Decree of the President of the Republic of Uzbekistan dated October 8, 2019, 85% of the country's universities will gradually switch to the credit-modular system by 2030. In the 2021-2022 academic year, many educational institutions in the country switched to the credit-modular system. The ECTS credit-modular system has been implemented in these universities.

2. Research Methodology

This research uses a mixed-method approach to examine how individual educational trajectories are structured in the credit-modular education framework. It combines quantitative and qualitative data collection and analysis to obtain a deeper understanding of the problems encountered during the implementation of the system.

Preliminary work started with a literature review in order to establish some ideas about previous challenges and theoretical frameworks of the credit-modular system. This review formed the basis for the subsequent phases of data collection. Quantitative data collection consisted of structured questionnaires administered to 200 students and 50 faculty

across the three universities that have adopted the credit-modular system. Specifically, the survey incorporated a mix of closed and open-ended questions aimed at assessing subjects' perceptions in terms of the effectiveness of the system, its challenges, and possible areas of improvement.

Besides the questionnaires, qualitative data was also collected through semi-structured interviews among 15 key stakeholders, including academic administrators, program coordinators, and faculty members. These interviews sought to delve into more practical challenges in the implementation of individual educational trajectories and what kinds of support students would need in order to successfully navigate the system. Thematic analysis was performed on the qualitative data to enable common themes and patterns emerging from experiences and perspectives advanced by participants to be identified.

A stratified sampling technique was used to capture representativeness across different academic disciplines and types of universities, including public, private, and specialized institutions. In such a way, the sampling strategy captured wide experiences and views that enriched such a nuanced understanding of the problem at hand.

Quantitative data were summarized using descriptive statistics, while inferential statistical tests of differences, such as chi-square tests, were conducted to examine significant differences in perceptions across different demographic groups. Qualitative data were coded and analyzed using the NVivo software to systematically identify recurring themes and insights from the interview transcripts.

Informed consent was acquired from all the participants, and the study followed strict ethical guidelines. Confidence and anonymity were ensured in the research process, and the Institutional Review Board of Jizzakh State Pedagogical University granted the ethical clearance for the research.

Such an investigation is particularly valuable for exploring the credit-modular system in Uzbekistan, but it does have some limitations in its specific focus, likely failing to generalize into other contexts of education. Its heavy reliance on self-reported data introduces the likelihood of bias into the findings. Despite such limitations, the mixed-methods approach offers a robust framework for understanding how individual educational trajectories are structured, providing a basis for evidence-based recommendations for policy and practice.

3. Main Part

In the context of the modern transition to a credit-modular system, the development of individual educational programs for future teachers is of great scientific and practical importance. One of the urgent tasks is the individualization of the content of education, ensuring flexibility and variability of educational trajectories taking into account the professional interests and desires of students.

Credit technology of education is a method of organizing the educational process, in which students have the opportunity to individually plan the sequence of their educational trajectory. The essence of credit technology of education is that the accounting of the labor intensity of educational work is carried out in credits, characterizing the volume of the material taught. One of the main tasks of credit technology of education is to increase the role of independent work of students.

The purpose of introducing credit technology into the educational process of educational institutions is:

- Integration of the domestic education system into the international educational space;
- Ensuring academic mobility of subjects of the educational process;
- Unification of the volume of students' knowledge;
- Maximum individualization of training;
- Increasing the role of independent work.

According to scientists, credit technology of education is an educational technology that increases the level of self-education and creative acquisition of knowledge based on individualization, elective educational trajectory within the framework of regulation of the educational process and accounting of the volume of knowledge in the form of credits, is one of the varieties of a non-linear system. It allows a more flexible attitude to the educational process, the student can choose a larger number of courses for independent study.

There is a purely financial problem of implementing the innovation: in order for the credit technology to be fully implemented in the education system, it is necessary to improve the material and technical base, that is, additional equipment, equipment and additional computer classes. Today, in Uzbekistan, every higher education institution can afford it. In addition, each student must have an individual mobile phone.

An individual educational trajectory is a personal path for

realizing the personal potential of each student in education. [5] Synonyms include "variable learning," "individual educational route," etc. [2] It differs from personalized learning, in which the student determines the trajectory of his or her learning, in that in this case, teachers participate in the formation of the educational trajectory.

The Resolution of the President of the Republic of Uzbekistan Sh. M. Mirziyoyev dated July 11, 2019 No. PD-4391 "On measures to introduce new management principles in the system of higher and secondary specialized education" was adopted with the aim of raising the process of training highly qualified personnel with ethical qualities, independent thinking to a qualitatively new level, modernizing higher education, developing the social sphere and economy based on advanced educational technologies. [1]

It includes a gradual transition of the educational process in higher education institutions to a credit-modular system, the introduction of advanced standards of higher education based on international experience, including a gradual transition from theoretical skills to practical ones in curricula. One of the best teaching practices used in the educational process today is the credit-modular system of training. Credit-modular training is one of the most promising training systems, since it is best suited for the system of developing the cognitive abilities and creative abilities of students.

In traditional education, learning objectives are expressed through pedagogical activity, i.e. they are knowledge-oriented, while in credit-modular learning, students are oriented toward professional activity.

In an effort to join the ranks of developed countries, Uzbekistan, like all sectors of the economy, adheres to a credit-modular approach to the introduction of advanced technologies in education and thereby bringing the content of education to world standards.

The educational process in the higher education system has always been the subject of public attention and discussion in various media. The problems of higher education are among the problems that the world community needs to solve in the near future. In turn, higher education also faces the task of fulfilling its honorable duty in a changing world and training competitive personnel who meet today's needs and requirements. Therefore, the transition to credit-modular training in general education institutions and the use of interactive methods in the educational process, stimulating students to actively work in class, improving the quality of education by developing independent work skills is one of the pressing issues in education. [4]

One of the main tasks of higher education is the development of students' creative abilities. Today, the education system cannot be imagined without new pedagogical technologies. This requires a modular approach to the learning process. A module is a logically complete educational material formed on the basis of developed principles, aimed at mastering one or more scientific concepts. The term "modular learning" refers to the international concept - a module ("module", Latin *Modulus*), the meaning of which is a node consisting of closely related elements capable of functioning.

Since the module is an independent component, in some cases it allows individual students to attend only a series of modules rather than the entire subject. This allows gifted students to optimally plan their individual and independent work.

The relevance of the modular approach to training is to improve knowledge, skills and competencies in the use of advanced pedagogical technologies in the educational process. As a result of studying the module, students will receive the following knowledge, skills and abilities:

Can describe advanced teaching technologies;

Can distinguish between elements of advanced teaching technologies;

Studies teaching methods used in the classroom;

Can use interactive methods in the teaching process;

Can analyze the advantages and disadvantages of traditional and interactive teaching methods.

As the content, goals and objectives of education expand, its forms and methods expand over time. Today, the main areas of human activity are transformed into a holistic system, i.e. technology that allows for the full achievement of the goals of this activity. In this same area of education, pedagogical technologies have been introduced in recent years.

In order to apply pedagogical technologies in the educational process, it is necessary to create a scientific and practical mechanism. It should be noted that the system (mechanism) that allows collecting new pedagogical technologies, educational innovations in the country, testing the most effective of them for our work and introducing them into the educational process has not been formed.

The most pressing issue and task today is the implementation of educational standards in the educational process. If this task is not accomplished, the issues of achieving quality and efficiency in the field of education and improving the educational process will remain unresolved.

Based on the above considerations, the goals and objectives of teaching biological sciences in higher education institutions are formed from these state and public orders. When teaching biological sciences, the teacher faces the following tasks for fulfilling these orders:

- ✓ spiritual and moral education of students in the process of biological education, development and implementation of effective forms and methods of educational work;
- ✓ use of innovative and information and communication technologies in the educational process in biological sciences;
- ✓ accelerate the educational process in the field of teaching biological sciences using a modular training system;
- ✓ ensuring a humanitarian focus of biological education based on the rich spiritual and intellectual heritage of the people and universal values;
- ✓ development and implementation of a new generation of curricula, educational and methodological complexes

and didactic support for the process of biological education;

- ✓ develop spiritual and moral qualities of students at all levels and stages of biological education based on the principles of national independence and the rich intellectual heritage of the people, and the priority of universal values;
- ✓ introduce national ideas and ideology into the minds and hearts of students in the process of biological education, raise the level of ideological education in educational institutions to a modern level;
- ✓ ensure the integrity of students by integrating training and education into the educational process, improving legal, economic, environmental and sanitary education and education;
- ✓ It is necessary to deepen the ideological knowledge of future teachers.

Based on the possibilities of one article, we would like to consider the use of advanced pedagogical technologies in teaching biological disciplines, which are an important factor in the formation of independent work skills of students in the credit-modular system of education.

One of the most pressing issues today is the development of textbooks that incorporate all components of the educational content. Integrated learning (traditional learning, which is currently being integrated with innovative technologies in the educational process) serves as the basis for a systematic approach to teaching biological sciences. The basis for a systematic approach to teaching biological sciences [3] is the integration of educational content, methods, means and forms of learning, and these components of the educational process form a single pedagogical system.

Students learn that the science of human anatomy and physiology is one of the most important branches of biological sciences, that the object of study is living organisms, to study the processes of life in their individual systems, organs, tissues and cells, to understand their nature and mechanisms that explain the relationship of life processes in the body of animals, the discovery of cause-and-effect relationships between phenomena, as well as the identification of their general patterns. Also, that physiology is an independent science, the results of which are based on accurate experimental data, today this science is in great demand in all institutions.

The use of advanced pedagogical technologies and information technologies, including the Internet, as well as advanced foreign experience in the further development of the pedagogical and methodological industry is the direction of the educational policy of our state. Over the years of independence, many professors and teachers of higher education institutions have been trained in foreign countries, such as Germany, Japan, Malaysia, through the Teacher Talent Funds, distance learning, master classes, webinars, epistemological methods contribute to the gradual introduction of higher education in our country. Today, the higher education system includes such concepts as an electronic

portfolio, a tutor-adviser, a facilitator, a moderator, a credit-modular system.

At the turn of the 20th and 21st centuries, the development of innovative education has become a global problem. Today, in its various manifestations in different countries, the following common features are obvious:

- 1) Ensuring compatibility of the needs of development of social practice and the actual level of training of graduates of higher education;
- 2) Setting new tasks in higher education institutions and complicating the organizational structure and forms of management;
- 3) Increasing the interest and capabilities of subjects of the educational process.

The main goal of innovative education is to cultivate in students a sense of responsibility for the future and self-confidence, a group of scientists led by Yu. Botkin in a report to the Club of Rome described innovative education as a key type of acquiring knowledge as an alternative to traditional, i.e. "normative" education. While normative education "aims at mastering the rules of behavior in recurring situations," innovative education involves developing the ability to act together in new situations.

Innovative technologies are aimed at forming active life relationships of students. These include new forms of interactive methods in the learning process. These technologies are widely used today in organizing the educational process in higher education institutions of developed foreign countries, including the USA, Finland, Germany, Japan and Russia.

Today, the following innovations and educational technologies are used in developed countries: SMART technologies and MEDIA education.

4. Conclusions

Reforming and improving the education system in Uzbekistan in the 21st century is one of the priorities. This, in turn, requires our specialists to update textbooks taking into account the requirements of modernity and the latest achievements of science, the introduction of innovative and educational technologies into the educational process.

The rapid development of science and production, along with the economic development of society, creates the basis for fundamental changes in the content of social relations. Much attention is also paid to the introduction of technological approaches in the social sphere, including education. A person, his harmonious development and well-being, the creation of conditions and effective mechanisms for the implementation of individual interests, changing the norms of outdated thinking and social behavior are the main goals and driving force of economic reforms in the republic. An important condition for the development of Uzbekistan is the formation of a perfect system of training personnel based on the rich intellectual heritage of the people, universal values, modern culture, economics, science, engineering and technology.

5. Recommendations

The university should, therefore, provide an all-inclusive support service that encompasses academic advising, career counseling, and workshops to enable students to develop independent learning skills. Students would require individual guidance in the best way possible to facilitate the making of correct choices regarding the routes in which they intend or would take their educational pathways. The teaching faculty, to this effect, needs sensitization through training programs to familiarize them with the fine details of the credit-modular system. It needs to be not only technical but also pedagogical training in respect of the involvement of students and in how to support students in independent learning. Sufficiently developed technological infrastructure at the level of educational institutions will allow for implementing the credit-modular system efficiently. This means the complete adaptation of digital platforms for course management, access to resources of electronic learning, and provision of all students with tools to take part in the online learning components. Second, it will be fundamentally possible to create flexible curriculum models in which learning paths can be more individualized for students. By permitting different sub-specializations based on career interests and objectives, students can more specifically tailor their education. Similarly, this concept of flexibility is extended to the availability of a wide range of elective courses and interdisciplinary learning opportunities. This would go a long way in helping the sharing of resources, best practices, and strategies in implementing the credit-modular system between universities. Such a partnership will also allow student exchange programs, joint research projects, and the creation of shared digital resources. It will be necessary to introduce a mechanism for continuous assessment and feedback with the aim of monitoring student progress with a view to making necessary adjustments in their educational trajectories, offering timely support and guidance during their study. It will also be important to encourage research and innovation regarding educational practices compatible with the credit-modular system through pilot projects, experimental courses, integration of new technologies, and methodologies. Another relevant factor that must be considered is the financial one: this means added equipment and other digital tools, faculty training. Government sources, private sector partners, and international grants should be solicited to meet the challenges. The students should also be informed on the advantages accruable from the credit-modular system, which shall be made possible through orientation programs, information sessions, and student activities relating to peer support and the dissemination of knowledge. Lastly, the introduction of the credit-modular system needs to be monitored and evaluated regularly. Data collection with regard to students' performance, satisfaction, and engagement will be indicative of what needs to be changed in order to ensure the achieved system has really improved the quality and flexibility for which it was created.

REFERENCES

- [1] Resolution of the President of the Republic of Uzbekistan “On measures to implement new management principles in the system of higher and secondary specialized education” dated July 11, 2019 No. PD-4391. <https://lex.uz/docs/4415487>.
- [2] Vdovina S. A., Kungurova I. M. The essence and directions of implementation of the individual educational trajectory // Internet journal Naukovedenie. 2013. <https://naukovedenie.ru/index.php?p=issue-3-13>.
- [3] Sukhorukova L. N., Sorokin A. D., Vlasova E. A. A systems approach to designing the content of secondary biological education. yberleninka.ru/article/n/sistemnyy-podhod-v-konstruirovanii-soderzhaniya-srednego-biologicheskogo-obrazovaniya.
- [4] Khakimova M. Credit-modular system: features and possibilities. <https://yuz.uz/ru/news/kreditno-modulnaya-sistema-osobennosti-i-vozmoznosti>.
- [5] Khutorskoy A. V. Methodology of personality-oriented learning. How to teach everyone differently? - M., 2005. https://www.khutorskoy.ru/books/2005/met_lich_orient/index.htm.