

Structural–functional model of the students’ adaptation process to the European Credit Transfer System

Eremeeva Guzel Rinatovna

Institute of International Relations
Kazan Federal University
Kazan, Russia
email: guzeliksanova@rambler.ru

Fakhrutdinova Anastasiia Viktorovna

Institute of International Relations
Kazan Federal University
Kazan, Russia
email: avfach@mail.ru

Kondrateva Irina Germanovna

Institute of International Relations
Kazan Federal University

Kazan, Russia

email: irina.kondrateva.67@mail.ru

Sabirova Diana Rustamovna

Institute of International Relations
Kazan Federal University
Kazan, Russia
email: dianasab@mail.ru

Ilikova Lilia Ernstovna

Institute of International Relations
Kazan Federal University
Kazan, Russia
email: liliaernst@mail.ru

Abstract – The relevance of the problem under study is caused by the need to implement new educational models that meet international standards. The article is devoted to the problem of students’ adaptation to the European Credit Transfer System (ECTS). The purpose of the article is to build a structural-functional model of the students’ adaptation process to ECTS. The theoretical and methodological basis for building the model was a systematic approach, the essence of which lies in the fact that relatively independent components are considered in their interconnection and development. As a result of theoretical analysis and generalization of the empirical material obtained during the study, the term “adaptation to ECTS” is defined. The structure and functions of the model are determined. The model is characterized by three related components (motivational-targeted, content-technological, result-evaluative) and is based on a system of principles. Each component performs its own functions. Special attention is paid to the levels of formation of students’ readiness for educational activities in ECTS environments. Materials of the article can be useful to the experts working in educational institutions, to students, and to everyone who is connected with the field of education.

Keywords – students, teachers, education, adaptation, ECTS, model

I. INTRODUCTION

The integration of countries into the world community requires the introduction of new educational models that meet international standards, allowing to unleash the creative potential of young people and give a powerful intellectual impetus to the development of society in the 21st century. The introduction of the European Credit Transfer System (ECTS) to higher education in this case is an objective reality.

ECTS is a tool of the European Higher Education Area for making studies and courses more transparent. It helps students to move between countries and to have their

academic qualifications and study periods abroad recognized. ECTS allows credits taken at one higher education institution to be counted towards a qualification studied for at another. ECTS credits represent learning based on defined learning outcomes and their associated workload. ECTS enhances the flexibility of study programmes for students. It also supports the planning, delivery and evaluation of higher education programmes. It is a central tool in the Bologna Process, which aims to make national education systems more comparable internationally. ECTS also helps make other documents, such as the Diploma Supplement, clearer and easier to use in different countries [1].

In modern pedagogy, ECTS is defined as an educational system that increases the level of self-education and creative development of knowledge based on the individualization and choice of the educational trajectory within the framework of strict regulation of the educational process and taking into account the amount of knowledge in the form of credits. This system involves the creation of an individual trajectory of professional development for each student.

With ECTS, there is a shift from the one-sided activity of a teacher to independent learning, the activity, and the responsibility of the student. It becomes possible to plan the sequence of the educational process individually. The continuity of education is maintained [2].

The significant differences between the new educational system and the traditional one have determined a number of difficulties that the subjects of education face. All this gives a peculiarity to the process of students’ adaptation to ECTS, which requires the construction of a model of this process.

We define adaptation to ECTS as a purposeful process of students’ adaptation to the conditions of study at a university based on the active interaction of subjects of

education with each other and the new didactic environment, which ensures the success of educational activities [3].

In the most general sense, a model is a specially created form of an object to reproduce some of the characteristics of a genuine object to be known. In particular, V.A. Shtoff, whose position we adhere to, gives the following definition of a model: "A model is such a mentally represented or materially realized system that displays or reproduces the object of study, is able to replace it so that its study gives us a new information about this object" [4].

Thus, the purpose of the study is to build a structural-functional model of the students' adaptation process to ECTS.

II. METHODS AND MATERIALS

The theoretical and methodological basis for building a model of the students' adaptation process to ECTS was a systematic approach (V.G. Afanasiev, I.V. Blauberg, L. von Bertalanffy, V.N. Sadosky, E.G. Yudin, and others), the essence of which lies in the fact that relatively independent components are considered not in isolation, but in their interconnection, in development and movement. The significance of applying a systematic approach to studying the problem of students' adaptation to ECTS as follows:

1) the process of adaptation to ECTS is a subsystem of professional training, which allows it to be built taking into account general didactic principles;

2) the process of adaptation to ECTS as a pedagogical system is open, probabilistic, flexible, dynamic, manageable;

3) the effectiveness of the process of adaptation to ECTS depends on the organization of systemic influences to prepare students for the educational process at the university and the creation of special pedagogical conditions;

4) readiness for educational activities under ECTS is the result of adaptation and can be considered as a pedagogical system.

The systematic approach made it possible to focus on the systematic study of a set of interrelated properties, methods, and processes necessary to create an organized and purposeful influence on students' adaptation to ECTS.

The model of the students' adaptation process to ECTS, constructed on the basis of the systematic approach, has its own goals, content, forms, and methods. It is based on a certain system of principles. Following V.I. Zagvyazinsky, we understand the principle as "an instrumental expression of the pedagogical concept given in the categories of activity, a methodological reflection of the known laws and patterns; knowledge about the goals, essence, content, structure of training, expressed in a form that allows them to be used as regulatory norms of practice" [5]. As a result of theoretical analysis and generalization of the empirical material obtained during the study, we came to the following system of principles: scientificity, consistency, accessibility, durability and periodicity, consciousness and activity, individualization, differentiation, integrity, cooperation, processability, openness.

The selected system of principles determined the set of requirements that the model of the students' adaptation process to ECTS should satisfy the following:

- the orientation of the adaptation process to the development of students' readiness for educational activities in the conditions of ECTS;
- taking into account the subjective experience of each student, their age and individual characteristics;
- creating conditions for the emergence and development of students' initiative and activity in the organization of independent work;
- development of cooperation forms between the subjects of the educational process in accordance with the gradual movement of students to self-regulating activities in the process of setting and solving productive educational problems;
- providing and functioning of the process of integrating the content, forms, and professional training methods, which orient students to creative self-educational activity.

III. RESULTS

The model we have built is structural and functional, as it has a certain structure, a number of components characterized by interconnection, and each component performs certain functions.

We consider **the motivational-targeted component** as central in the system of model components aimed at the efficiency and effectiveness of the students' adaptation process to ECTS. It ensures the definition of the goal and the specification of tasks for students' adaptation to ECTS, the study and development of their motivation, the formation of a positive attitude towards the new educational system, professional activity, and orientation towards self-educational activity.

This component performs the following functions:

- goal-setting (decomposition of the goal in accordance with the stages of the process of students' adaptation to ECTS, the creation of students' target settings for the formation of readiness for learning in its conditions);
- motivation (the formation of socially significant motives for learning activities, core cognitive interests, motives for self-educational activity);
- values-based orientation (formation of a value attitude to ECTS, future professional activity, subjects of education).

One of the components of the motivational-targeted component of the model is the motivational-values-based attitude to ECTS and learning activities in its conditions. The main position here is occupied by motives and values-based orientations. In order to form students' motivational and values-based attitude to ECTS, it is necessary to form and develop their need for cooperation with participants of the educational process, positive emotions, creative self-educational activity. It will contribute to the effectiveness of the students' adaptation process to ECTS. Needs and motives induce a person to activity. Values, subject to their awareness

and experience, perform the function of a guide in human behavior. Therefore, the formation of such values-based orientations as the attitude to professional work, to oneself and to colleagues, to the subject taught, is also very important for achieving the goal. Scientists note that “if a person has socially significant values-based orientations, it leads to a conscientious attitude to work, encourages them to search, to create, improve, and to some extent it compensates for insufficiently developed skills and abilities” [6].

Thus, the system of needs, motives, and values-based orientations determines the activity of subjects in the learning process under ECTS, which should be aimed not only at achieving results but also at satisfaction with the learning process itself. This determines the motivational-values-based attitude to ECTS and ensures successful adaptation to it.

Any activity must be subordinated to a common goal [6]. The role of a common goal is played by a conscious motive, which, thanks to its awareness, turns into a motive-goal. According to the analysis of scientific literature, any goal is characterized by the representation of the image of the future result and a conscious desire to achieve it [7], [8]. Therefore, the goal of adaptation is a given benchmark for the final result, which all its content is directed to in order to ensure the effectiveness of the studied process [9]. The purpose of students' adaptation to ECTS is to form their readiness for educational activities in its conditions. Setting and effective implementation of a goal require its representation through a system of subgoals, that is, its decomposition [10], [11].

As follows from the decomposition of the goal of the students' adaptation process to ECTS, a set of subgoals was revealed. They are divided into three groups.

Group 1 – *the formation of theoretical readiness for ECTS* – includes the following:

- assimilation of knowledge about the goals of education in the conditions of ECTS; the structure and content of training; forms and methods of teaching; independent work; control of students' knowledge; teaching staff;
- use of the conceptual and terminological apparatus of ECTS.

Group 2 – *the formation of practical readiness for ECTS* – involves the following:

- formation of skills to develop an individual curriculum;
- development of independent work skills;
- technological approach to the application of forms and methods of teaching;
- formation of the ability to work with a large amount of information;
- formation of scientific organization skills of mental work;
- formation of professionally important qualities of personality.

Group 3 – *the formation of a motivational-values-based attitude to ECTS* – suggests the following:

- formation of a positive attitude to ECTS and values-based orientations;
- fixation on self-educational activity;
- formation of cooperation with the participants of the educational process.

These goals determine the content and technological aspects of the students' adaptation process to ECTS, requiring purposeful work to form students' knowledge, skills, and a positive attitude towards the new educational system.

The implementation of this component is carried out through the technology of modular and sign-context learning.

The content-technological component is designed for students to master the knowledge and skills necessary for successful adaptation to ECTS. This component performs the following functions:

- tutorial (getting knowledge about ECTS and skills of self-educational activity by students);
- educational (formation of professionally important qualities of personality, attitudes, values-based orientations);
- constructive (determining the content of the students' adaptation process to ECTS);
- organizational (implementation and coordination of the students' work under ECTS);
- informative (ensuring the use of various sources of information for effective work in the conditions of ECTS).

Within the framework of this component, two interrelated types of training are carried out: theoretical and practical.

Theoretical training of students is aimed at mastering the basic knowledge necessary for their successful adaptation to ECTS. This is knowledge about the goals of education in the conditions of ECTS, the essence of ECTS, namely, knowledge about its structure and content, forms and methods of teaching, individual work, control of students' knowledge. Theoretical training is implemented through high-quality information support of the educational process, which involves providing each student with an information package, the work of the information and analytical center of the university, as well as through the study of psychological and pedagogical disciplines, organizing and conducting an introductory course “Introduction to ECTS”.

Practical training of students within the framework of the content-technological component of our model involves the formation of skills to study in ECTS environments on the basis of mastered knowledge about ECTS. To achieve this goal, purposeful work is needed to develop students' skills to work with a large amount of information, to develop an individual curriculum, to develop skills for independent work and the scientific organization of mental work. In addition, the technological approach to the use of active forms and methods of teaching in the educational process, aimed at including teachers and students in dialogic communication, is relevant. Particular importance is given to the formation of students' ability to reflect, during which the student moves from the result to the goal and

thereby checks himself, determining where mistakes were made. The result of the student's reflection is to establish the reasons for the discrepancy between the goal and the result, determine the main ways to eliminate them, and realize the need for their further development and improvement. Practical training is implemented in the process of studying the disciplines on psychology and pedagogy, work in groups of "free communication" and a special course "Scientific organization of students' work within the framework of ECTS."

The result-evaluative component of the model provides getting information about the effectiveness of the students' adaptation process to ECTS, the difficulties and achievements of students in mastering knowledge, developing the required skills and abilities. This component in the structure of our model performs a number of functions:

- informational (providing data about the level of students' preparation for studying in ECTS environments);
- predictive (identifying development trends in the process of forming students' readiness for studying in ECTS, establishing links between the connections that affect this process);
- analytical (identifying difficulties, determining ways to improve the adaptation process);
- controlling (comparing the state of students' readiness to study under ECTS with the goals and objectives);
- stimulating (forming student confidence in their own abilities, encouraging their activity and independence, interest in future activities);
- reflexive (providing students' subjective position in the educational process, their understanding of their own experience).

The methods for implementing this component are assessment, self-assessment, testing, and questioning.

Since the developed model aims to adapt students to ECTS, it is necessary to determine the main criteria and indicators of its effectiveness.

An analysis of research on the problem of adaptation shows that an indicator of students' adaptation to studying can be their readiness for educational activities. In our case, it is *the readiness for educational activities in ECTS environments*.

Based on the requirements for defining criteria, it is necessary to use such a characteristic (indicator) as the promotion of students to higher levels of readiness for educational activities as the main criterion for measuring students' adaptation to ECTS.

Three indicators are distinguished to identify the levels of formation of students' readiness for educational activities in the conditions of ECTS:

- 1) motivational-values-based attitude to ECTS;
- 2) the body of knowledge about ECTS and training skills;
- 3) the ability to reflect.

Thus, the motivational and orientational components in the structure of students' readiness are combined into the first indicator – *a motivational-values-based attitude to ECTS*, which is characterized by a positive attitude towards the new educational system, a focus on a future specialty, an orientation on self-education, and a need for collaboration with participants of the educational process. The operational component is represented by the second indicator – *the body of knowledge about ECTS and training skills*, which assumes that students have knowledge about the essence and features of ECTS, the use of its conceptual and terminological apparatus, the development of scientific organization skills of mental work, skills of independent work, the ability to join collaborative activities, to take an active position in the educational process at the university. Volitional and evaluative components in the structure of students' readiness are reflected in the third indicator – *the ability to reflect*. This indicator is characterized by the degree of adequacy of assessment and self-assessment, exactingness in assessing one's own work, self-control of students.

The level of each indicator demonstration cannot be determined without a system of signs emphasizing its characteristic features. Therefore, table 1 presents a sign system of indicators of students' readiness for educational activities in ECTS environments and methods for diagnosing them.

TABLE I. THE SYSTEM OF INDICATORS OF STUDENTS' READINESS FOR EDUCATIONAL ACTIVITIES IN ECTS ENVIRONMENTS AND METHODS FOR THEIR DIAGNOSIS

Indicator	Characteristic features	Diagnostic methods
Motivational-values-based attitude to ECTS	Awareness of the importance of studying at a university with an actively positive attitude to ECTS; focus on the future specialty; orientation on self-educational activity; the need for collaboration with the participants of the educational process; awareness of personal responsibility for the results of educational activities; satisfaction with studying in ECTS environment.	Questionnaires, interviews, individual conversations, observation.
The body of knowledge about ECTS and training skills	Knowledge about the goals of higher education; knowledge about the features of ECTS; use of its conceptual and terminological apparatus; knowledge about active forms and methods of teaching, organization of independent work, methods of educational cooperation; the ability to work with a large amount of information and perform various information functions;	Observation, written survey, expert assessments, analysis of current answers and final assessment in the academic discipline, self-assessment,

	development of scientific organization skills of mental work, skills of independent work; the ability to join collaborative activities, to take an active position in the educational process at the university.	analysis of participation in discussions, role games, analysis of student activity products.
The ability to reflect	The degree of adequacy of assessment and self-assessment; the degree of formation of one's own position; the ability to critically evaluate own actions; level of self-control.	Analysis of answers in the classroom, self-assessment, peer review, observation of activities.

IV. CONCLUSION

To sum up, the theoretical and methodological basis for building a model of the students' adaptation process to ECTS is a systematic approach that focuses on the systematic study of a set of interrelated properties, methods, and processes necessary to create an organized and purposeful influence on students' adaptation to ECTS.

The structural-functional model of the students' adaptation process to ECTS is characterized by the presence of three related components (motivational-targeted, content-technological, result-evaluative) and is based on the principles of scientificity, consistency, accessibility, durability and periodicity, consciousness and activity,

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individualization, differentiation, integrity, cooperation, processability, openness.

The criterion for students' adaptation to ECTS is their readiness for educational activities in the conditions of the new system, the indicators of which are the motivational-values-based attitude to ECTS, the body of knowledge about ECTS and training skills, the ability to reflect.

In conclusion, the study of the current state of the education system, new trends in the system of higher education, and the analysis of psychological and pedagogical literature have shown that the need for students to adapt to ECTS come from the introduction of this system into the educational process of higher education, as well as the insufficient development of the problem under study in the theory and practice of pedagogy.

The structural-functional model of the students' adaptation process to the European Credit Transfer System created by us is a holistic, open, dynamic unit that makes the process of students' adaptation to ECTS important, purposeful, and effective.

Materials of the article can be useful to the experts working in educational institutions, to students, and to everyone who is connected with the field of education

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