

## **CONTEMPORARY PROBLEMS OF FUNCTIONING OF THE INFORMATION AND EDUCATIONAL ENVIRONMENT OF THE UNIVERSITY**

*Aksenchyk Natallia, Assist., Polessky State University, Republic of Belarus  
aksenchiknatalia@mail.ru*

The development of modern society dictates the need for active implementation of information technology in the field of education. This direction is relevant in the context of training qualified specialists capable of professional development, mobility in mastering and implementing the latest information technologies, mastering information and communicative competence.

Considering the process of informatization of higher education in the foreground the need for effective construction and functioning of the information and education environment (IEE), which is a holistic and multicomponent system of influences, conditions, opportunities for formation and development of the students. The development of IEE opens up the following opportunities for higher education institutions (HEI) within the educational process:

- the possibility of implementing the technology of individual-oriented learning in a particular subject by providing full information on the program, the form and order of the organization of training, the presentation of theoretical material, materials for self-study, research project assignments;

- the possibility of differentiation of the learning process through the use of tools and technologies to select assignments of different levels, the organization of independent progress on the topics of the course for successful students and return to the neglected material for lagging students;

- the possibility of implementing an individual trajectory of advancement in the subject area through the choice of the level and type of presentation of material depending on the individual development of types of thinking;

- the possibility of using various forms of independent learning.

It seems reasonable to focus on the consideration of the IEE HEI essence from the positions of technological and didactic approaches, which allows defining it as a multifunctional multi-component system. At the same time, it should be noted that within the indicated technological approach researchers (Y.I.Vorotnitsky, P.A.Mandrik, I. A.Tavgen and others) to a greater extent pay attention to instrumental-technological and procedural aspects of understanding the essence of information and educational environment, as well as the technological potential of its components, constituting a system construct [1,4], forgetting about the didactic role of elements of the IEE HEI structure. Consequently, the information and education environment cannot be regarded only as an instrumental and technological environment from the position of filling the field of education by means of information and communication technologies and creating pedagogical tools on their basis. It is advisable to consider IEE as an effective means of organizing the educational process, the content of which is disclosed in curricula, educational and

methodological complexes, methodological developments, Internet resources and subsystems that organizationally implement management functions (document workflow, monitoring and management of education, informing various categories of users, etc. ), as well as in accessible sources of information, including electronic libraries, electronic educational applications, scientific and educational portals that provide access to both global and internal information resources of a modern institution of higher education.

In this connection, within the framework of the issue of the efficiency of the IEE functioning, it is relevant to further build the relationship between the didactic and technological potential in the conditions of the educational process of higher education institutions, which involves the unification and integration of all the elements being combined into a unified information system.

A separate unresolved problem in the functioning of the IEE is the lack of preparation of teaching staff and students to master new information technologies, as well as underestimation and unwillingness to use computer-based learning. Significant potential of the information and education environment of higher education institutions remains unused due to the low information culture of both students and teachers. At the same time, no sustainable system has been developed for including students in the IEE HEI: the use of its resources and the impact on students are more situational than systemic.

Consequently, it is necessary to identify the essence, objectives, features, methods of informatization of educational activities, technical means, issues of formation of readiness of teaching staff to use them as the main directions systematizing the content of future specialists' training.

Thus, the analysis of scientific research in the actualized problems [1-4] allows us to identify the main directions of development of the IEE HEI in order to improve the efficiency of its functioning:

- generalization of practical experience, tracing new pedagogical trends and directions of education development based on the use of information and communication technologies;
- study of the specifics of the educational (subject) area for the practical implementation of the means of informatization;
- analysis, selection or development of new computer programs and software and methodological tools to support the educational process
- developing documentation on the introduction of ICT tools (descriptions of programs, explanatory notes, methodological recommendations);
- improvement of the ICT competencies of the teaching staff and the staff of the Educational and Methodological Association;
- introduction and development of new specialized academic disciplines and training areas related to information technology.

## **REFERENCES**

1. Vorotnitskiy Y.I., Mandrik P.A. Information and educational environment of the university: the experience of creation and maintenance / Y.I. Vorotnitskiy,

Mandrik P.A. // Information systems and technologies: proceedings of international scientific conference, Minsk, October 31. -3 November 2011, Minsk. In two parts, Part 1 / BSU; editor-in-chief: S.V. Ablameiko [and etc.]. - Minsk, 2011. - C. 329-335.

2. Elistratova N.N. Modern problems of informatization of higher education / N.N. Elistratova // Bulletin of Ryazan State University named after S.A. Yesenin. - 2010. - № 4. - C. 12-21.

3. Lozitsky, V.L. Informational and educational environment of higher education in the aspect of its multifunctionality / V.L. Lozitsky // High School- 2013. - № 5. - C. 51-56.

4. Tavgen, I.A. On the conceptual model of information and educational environment of the open education system / I.A. Tavgen // Informatization of Education. - 2004. - № 4. - C. 46-53.

## **CATALYTIC CONVERSION OF BIOGAS TO BIOMETHANE THROUGH DIRECT METHANATION**

*Barz Mirko, Prof. Dr.-Ing., Laß-Seyoum Asnakech, Prof. Dr. rer.nat.,  
HTW-Berlin, University of Applied Sciences, Germany*

Biogas, as a result of complex biological and chemical conversion processes, is a mixture of different gas components, mainly consisting of methane (45 – 75 %), carbon dioxide (25 – 45%), water vapor and other gases such as hydrogen sulphide, ammonia, nitrogen and oxygen. A huge increase in biogas production is recognized in the EU, caused by the renewable energy policies in European countries combined with economic, environmental and climate benefits. According to the European Biogas Association more than 19,000 biogas plants and 725 biomethane plants are already in operation, producing around 167 TWh of biogas and 26 TWh of biomethane. Europe is the world's leading producer biomethane for the use as a vehicle fuel or for injection into the natural gas grid and a further increase (at least doubling of the production capacities) is expected until 2030. The process of upgrading biogas to biomethane is meanwhile state of the art and generates new possibilities for its use, since it can then replace natural gas, which is used extensively in many of the European countries. The currently available biomethane upgrade technologies are characterized by the removal of undesired gas components such as water vapor, hydrogen sulphide and most important to remove the carbon dioxide to enhance the caloric value of the upgraded gas. Especially the removal of the carbon dioxide results in enriched biogas with higher methane content, which should be close to the value of natural gas. The removal of the carbon dioxide can be achieved by various techniques, such as adsorption, absorption, membrane or cryogenic upgrading techniques. The most commonly used techniques are:

- water scrubbing,
- organic solvent scrubbing,