Assessment of opportunities and prospects for the development of the distance education system in the conditions of modern challenges

Avaliação de oportunidades e perspectivas para o desenvolvimento do sistema de educação a distância nas condições dos desafios modernos

Evaluación de oportunidades y perspectivas para el desarrollo del sistema de educación a distancia en las condiciones de los desafíos modernos.

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Svitlana Zakharova
National University «Zaporizhzhia Polytechnic», Ukraine. https://orcid.org/0000-0002-6952-2558 E-mail: maxnik8888@gmail.com

Alona Prokopenko
Municipal Establishment «Kharkiv Humanitarian-Pedagogical Academy» of Kharkiv Regional Council, Ukraine. https://orcid.org/0000-0002-3735-342X

Larysa Pushkar
Sumy State Pedagogical University named after A. S. Makarenko, Ukraine. https://orcid.org/0000-0002-1289-3956

Liliana Khimchuk
Vasyl Stefanyk Precarpathian National University of Ivano-Frankivsk, Ukraine. https://orcid.org/0000-0002-9243-3131

Nataliia Buhaiets
Nizhyn Mykola Gogol State University, Ukraine. https://orcid.org//0000-0003-4162-0196

ABSTRACT

Objective: To assess the opportunities and prospects for the development of the distance education system under the conditions of modern challenges, focusing on the implementation of innovative and informational technologies.

Method: An innovative methodological approach is utilized for the development of distance education systems, including economic and mathematical modeling and the application of advanced educational technologies.

Results: The findings demonstrate improvements in the management mechanisms of innovative distance education systems and the development of innovative methods for the socio-economic assessment of the effectiveness of distance education.

Conclusion: It is concluded that the efficiency of distance education can be enhanced through the implementation of innovative structures and qualitative management based on socio-economic assessments, contributing to greater competitiveness of educational services.

Keywords: Distance Education; Socio-Economic Assessment; Innovative Systems; Management; Educational Services.

RESUMO

Objetivo: Avaliar as oportunidades e perspectivas para o desenvolvimento do sistema de educação a distância nas condições dos desafios modernos, com foco na implementação de tecnologias inovadoras e informativas.

Método: Utiliza-se uma abordagem metodológica inovadora para o desenvolvimento de sistemas de educação a distância, incluindo modelagem econômica e matemática e a aplicação de tecnologias educacionais avançadas.

Resultados: Os resultados mostram melhorias nos mecanismos de gestão de sistemas inovadores de educação a distância e o desenvolvimento de métodos inovadores para a avaliação socioeconômica da eficácia da educação a distância.

Conclusão: Conclui-se que é possível aumentar a eficiência da educação a distância mediante a implementação de estruturas inovadoras e a gestão qualitativa baseada em avaliações socioeconômicas, contribuindo para uma maior competitividade dos serviços educacionais.

Palavras-chave: Educação a Distância; Avaliação Sócio-Econômica; Sistemas Inovadores; Gestão; Serviços Educacionais.

1 INTRODUCTION

At the same time, one of the priority areas of development of education is the need to build distance learning based on the use of innovative technologies, in particular, interactive television and computer telecommunication networks (Lankshear, Colin, and Michele Knobel, 2008). To manage innovative processes in the education system, it is necessary to form, on an innovative basis, the principles of functioning of a new university model, which combines traditional education and several basic types of institutional forms (organizational structures) of distance education, including a set of technical, information and organizational-economic solutions. In this regard, the issues of developing innovative methods of managing educational technologies based on the formation of a distance learning system in the context of informatization and integration of social development are of particular relevance.

Assessing the possibilities and prospects for the development of distance education systems in Ukraine, it was revealed that a person's readiness to become a consumer of distance education services is determined, first of all, by such socio-economic factors as the presence of actualized educational needs as such and the impossibility of satisfying them within the traditional education system, interest in the main properties of distance learning (distance, openness, flexibility, relatively low cost), allowing to eliminate the main obstacles to learning, the possibility of meeting the requirements for the quality of educational services presented by their consumer, the presence of a set of conditions that allow practical use of distance education services (technical equipment, solvency, awareness of the possibilities of distance education). Modern society is becoming more and more dynamic in its development. Scientific and technological progress has led to a change in the approaches to education themselves, to an increase in the need for education, which is expressed in a quantitative increase in the number of people included in the educational process. The features and basic principles of the creation and functioning of the distance education system disclosed in the work are necessary for qualitative changes in the distance education system.

2 LITERATURE REVIEW

The works of such leading scientists as (Rheingold, 2020), (Giger, 2006), (Bawden, 2008), (Lau, 2006), (Gardner, Howard, 2013), (Casas, Jennifer P.,2020), (Tsilmak, O., Iasechko, S., Poplavska, M., Motlyakh, O., & Kabanets, O.,2022).

A significant contribution to the development of the theory and methodology for building open educational systems was made by such scientists as: (Lankshear, Colin, and Michele Knobel, 2008), (Warschauer, Mark, 2004), (Thomas, Douglas, and John Seely Brown, 2011), (Mills, Kathy A., 2016), (Turkle, Sherry, 2011), (Prensky, Marc, 2001, 2010), (Gruszczynska, Merchant, Pountney, 2013), (Gruszczynska, Merchant, Pountney, 2013), (Røkenes et al., 2016), (Markauskaite, Carvalho, Fawns, 2023).

At the same time, it should be noted that there is an insufficient level of research in the field of modern theory and practice of increasing efficiency, methods and techniques of management, and ensuring the sustainable functioning of innovative education systems based on the formation of a structure of distance education in the context of international cooperation, intensive exchange of information and products of intellectual labor with the aim of interaction of all factors in improving education through the development of joint research, production, and cultural projects.

The object of the article is a system of continuous distance education that implements the principles of innovative development.

The subject of the article is the methodological aspects of innovative management of the education system based on the formation of distance learning mechanisms

The purpose of the article is to develop provisions and methodological support for the innovative development of an open educational system based on the formation of a mechanism for managing distance learning.

The basis of the research were the fundamental ideas of economic development of the education system, modern philosophical concepts that reveal the patterns of historical development of society and the educational system, a historical-retrospective approach to the study of trends in the development of informatization theory; the unity of the historical and logical in the study of social phenomena taking into account global and integration trends, theories of open education, distance learning, and management of innovation processes.

3 RESULTS

The scientific novelty of the study lies in ensuring the increased efficiency of developing innovative strategies for managing educational technologies based on the formation of a distance learning mechanism, namely:

• substantiated theoretical and methodological approaches to the development and management of the organizational structure of distance learning within the framework of a multi-level education system,

• proposed innovative methods for assessing the effectiveness of distance education and the socio-economic effect, allowing to increase the competitiveness of educational services,

• formed mechanisms for managing innovative systems based on a comparison of the quality factors of educational services and the consumer value of education,

• defined socio-economic principles for managing the quality of distance education using the coefficients of demand for graduates and their compliance with job requirements.

4 DISCUSSION

It has been established that at the present stage of development of distance learning technologies it is necessary to ensure the compliance of tasks solved by various elements of the innovative educational system, coordinate joint activities to solve the whole range of problems, as well as assess the educational needs of students and orient the entire educational process to the most complete satisfaction of these needs.

The most important elements of the modern innovative educational system - economic, organizational, technological and pedagogical innovations - are identified and detailed.

It is proposed to include economic innovations in

• tax incentives for investment in education,

• new mechanisms for remuneration in the field of education,

• a mechanism for saving from the scale of educational activities;

• diversification of sources of financing education.

Organizational innovations in the work include

• new organizational structures and institutional forms (open, virtual universities, distance learning institutes) in the field of education,

• new mechanisms for organizing the educational process.

Technological innovations include

• new educational technologies based on the use of computer and telecommunication systems - multimedia, hypertext, interactive technologies, case technologies, etc.

Pedagogical innovations include.

• new pedagogical methods and techniques,

• new educational environment,

• structural changes in the pedagogical system;

• new style of work of teachers.

A study of existing approaches to assessing the activities of educational institutions allowed us to conclude that the problem of developing innovative structures of higher education, and therefore the choice of technologies for modern education, is not a technological issue, but a problem of innovative management in the field of education (Lisborg et al., 2021). To solve it effectively, it is necessary to regulate the connections between all subsystems and elements of the education system.

The proposed model of a distance learning program should take into account both the patterns of knowledge acquisition by students, factors and conditions that facilitate or hinder the achievement of planned results, and the ability of this educational material and methods and means specific to this form to correspond to these patterns.

In this regard, five main models of organization can be considered in relation to the distance learning system. The following descriptive characteristics of these models are proposed.

The first model is characterized by a segmented organization, which ensures only the interaction of the student with the learning tool with virtually no intervention from the teacher, when the necessary high-speed communication systems are absent and the student deals with a diskette or printed material (Gardner, Howard, 2013). Current feedback with the teacher is absent, as well as connections with other participants in the educational process. Delayed communication with them refers to the periodic contact of the student with the teacher during the session period.

The second model assumes the presence of communication networks for communication between the student and the teacher, which makes their relationship quite

close, timely and prompt. This already makes training more differentiated, providing favorable conditions for the formation of an individual style of mental activity of students.

However, the consulting and information assistance provided by the teacher concerns only the fragment of educational material provided for a certain session period and does not allow different members of the study group to move at an individual pace (Iasechko S., Pereiaslavska S., Smahina O., Lupei N., Mamchur L. and Tkachova O., 2022). This model is currently in effect in the correspondence education system using distance learning tools.

The third model provides for the use of group differentiation of students' activities depending on their level of development or the effectiveness of mastering educational programs. Based on the results of the final control during the session period or the generalization of the results of dispersed intersession control, the teacher arranges students into groups, the content, nature and intensity of activities with which are differentiated depending on their composition (Warschauer, Mark, 2004).

The fourth model is characterized by a collegial organization. This model provides not only for the presence of a connection between the teacher and the student, but also the existence of an equally operational connection between the students themselves (Tapscott, Don,2008). The teacher must put together flexible, homogeneous, dynamic groups of participants in the educational process and inform the students with whom exactly they will have to cooperate at a given stage of training. In such a model, elements of differentiation are present to an even greater extent, which is characterized by:

• the creation of homogeneous groups of students according to their abilities, interests, and inclinations,

• the organization of a subject- and socially rigidly oriented homogeneous environment in these groups,

• the organization of groups based on selection (selective differentiation) associated with the results of specific educational and cognitive activities and the successes achieved in them.

The fifth model achieves an even higher level of differentiation using a diagnostic-asynchronous model of organizing a distance learning process with vertical and horizontal feedback. It retains all the components of the previous model, but the division into groups is not based on the results of the educational process that is already

being implemented, but on the basis of preliminary diagnostics of the level of training and the formation of the student's mental work skills (Keskin, Yazar, 2015), (Espinosa, Ruiz, Mercado, 2021). The described models allow us to analyze the learning process from various angles and constructively approach the choice of the model that best meets the goals and objectives of a specific type of training.

Based on the research, theoretical and methodological approaches and organizational and economic mechanisms for the formation of a distance education system on an innovative basis are proposed.

Effective management involves the following classical chain: accounting—analysis—planning—control—regulation—> stimulation—organization—accounting. The same mechanism should be used in the management of all organizational systems, including distance education systems.

It is proposed to implement the solution to the problem of managing distance education systems based on the approaches and methods of the theory of managing organizational systems. In accordance with the general management functions, it is proposed to identify four mechanisms for managing the structure of distance education, such as planning, organization, stimulation (motivation), and control.

A two-level hierarchical system was taken as an organizational mechanism in the work. The only governing body (center) at the upper level can be considered the basic educational institution, and the only object of management (agent) at the lower level is the educational center. A model for managing the structure of distance education, taking into account the interaction of educational centers with each other, as well as the interaction of all elements of the system with the external environment, can be created on the basis of a multi-element organizational system. Such a system consists of interconnected agents at the lower level (educational centers), one center at the upper level of the hierarchy (the base educational institution) and the environment.

The basic educational institution, expressing the interests of the system as a whole, solves the problem of choosing such control actions that would motivate the regional educational center to take certain independent actions (obtain results, select states, etc.). Such a general description of the organizational system allows us to cover a wide range of tasks of managing the structure of distance education. The work proposes to apply a hierarchical structure that takes into account direct and feedback connections.

To solve the problems of organizational management of the structure of distance education, the paper proposes an algorithm consisting of the following stages:

1. Formation of the structure and composition of distance education, including "tasks on the purpose" or distribution of functions.

2. Evaluation of the effectiveness of the elements of the structure of distance education, i.e. the choice of evaluation criteria, scales and procedures.

3. Determination of the procedure for distributing resources (material, financial, personnel, educational units, etc.) in the controlled system for a given structure of distance education, as well as the presence of a system for collecting and processing information.

4. Coordination and harmonization of the interests of the participants in the structure of distance education (which may not coincide), i.e. development of an incentive (motivation) system.

5. Synthesis of an effective mechanism for control and operational management, allowing to monitor the functioning of the controlled system in real time and make adjustments in case of deviation of its indicators from the planned ones.

Thus, in the course of the study it was established that since any model is based on a set of certain assumptions, then as promising areas for further research it is necessary to define organizational management tasks taking into account the specifics of real distance education systems, as well as innovative models for organizing the learning process. The use of the entire arsenal of modern management theory in the management and organization of distance education structures is a necessary condition for increasing the validity of management decisions and structuring training programs and, consequently, the efficiency of the functioning of distance education structures.

There are various approaches to assessing the effectiveness of various educational systems. It is advisable to consider those that allow us to assess the relative effectiveness based on the analysis of educational technologies. Thus, we can highlight the following main components that determine the effectiveness of the educational system under study as a whole: the methodology for forming the knowledge system, the methodology for forming the system of professional skills and abilities, the profitability of the educational process and a reasonable strategy for tuition prices.

An educational system is more effective than another, under similar conditions, if the ratio of the number of hours of classes that form skills and professional abilities to the total number of classes is greater than the similar ratio in the compared system (up to

a certain limit). In other words, in order to form professional skills and abilities, it is necessary to conduct a sufficient number of practical classes, trainings, business games and other classes in which complex professional skills and abilities are practiced.

A large number of studies of the effectiveness of distance education conducted by economists are devoted to their cost effectiveness. In this case, the cost effectiveness for companies interested in training and retraining employees in the distance education system and the cost effectiveness for educational institutions conducting such training are assessed by comparing traditional and distance education. Assuming that the quality of training of graduates of distance and traditional universities is the same, the researchers come to the conclusion that the cost effectiveness of distance universities may be higher. In this case, economists proceed from the specifics of the cost of education at a distance university. It is also taken into account that students of non-traditional universities, combining study with work, contribute to the production of the gross national product.

6 CONCLUSION

The scientific results of the study are as follows:

• the specifics of the educational services market have been determined from the standpoint of active implementation of information and innovative technologies of distance education,

• an innovative organizational structure of distance education has been proposed, taking into account the interaction of regional educational centers,

• a mechanism for forming an innovative strategy has been developed based on determining socio-economic characteristics by comparing the coefficients of the quality of educational services, the consumer value of education and learning ability,

• socio-economic coefficients of demand for specialists and their compliance with professional and job requirements have been formulated,

• a method for calculating economic efficiency has been proposed, allowing for the specifics of distance education to be taken into account.

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