

E-LEARNING MANAGEMENT WITHIN ADAPTIVE ELECTRONIC EDUCATIONAL ENVIRONMENT OF THE UNIVERSITY

Vera I. Toktarova

Assoc. Prof., PhD, Mari State University, Russian Federation, toktarova@yandex.ru

Abstract

The introduction of the Federal State Standards of Higher Education presupposes the qualitative change in the organization of training through the widespread use of e-learning systems. The relevance of the problem studied in this paper is caused by the need to implement and improve the effective management of e-learning. The purpose of the study is the theoretical justification and practical implementation of the mechanism for managing e-learning in the electronic educational environment (EEE) of the University. The paper gives the definition of the learning process management. It describes the student model in EEE and gives the characteristics of its component parameters. The task of managing the learning process is formulated taking into account the target setting. The described scheme of managing the e-learning process is implemented in the program module of management and construction of learning scenarios in the EEE. Due to the relevance of the issues discussed in the paper, it may be interesting and useful to teachers and tutors of higher educational institutions both in theoretical and practical aspects.

Keywords: management of the learning process, e-learning, electronic educational environment, student, university.

1. INTRODUCTION

Currently the increase in efficiency of e-learning is directly related to the solution of problems related to the management of training in electronic educational environment.

According to the methodology of the cybernetic approach, management is considered as a process of transforming information in accordance with a certain purpose. Referring to the educational activities, it should be noted that the learning mechanism appears not as a transfer of knowledge, but as the management of the learning process. The teacher designs, directs, and corrects the learning activity of a student, which means that he/she manages it with the aim of achieving the outcomes.

The management of the learning process is understood as a set of measures to ensure the efficient functioning of the learning system based on the analysis of the initial condition of students and the outcomes of their learning by making corrections in the academic program. V.P. Bospalko (2002) considers the management of the learning activities as a purposeful influence on the students consisting in monitoring and controlling the quality of acquiring the elements of activities and correcting the mistakes.

We support the opinion of the authors regarding the need to take into account the parameters of the student model and believe that e-learning of the students should be implemented in the conditions of controlled learning. At the same time we emphasize that quality control is possible while obtaining full information on the subjects and the nature of the learning process both at the initial stage and during its implementation.

2. THE TASK OF MANAGING THE LEARNING PROCESS

The transition to the arranging the learning activities in the conditions of electronic information and educational environment leads to changing the methods and means of training, sources of knowledge, transforming the role and functions of a teacher as well as the ways of communicating with students. The great role in the development of EEE is given to algorithmic presentation of student's actions, the transfer of functions of a teacher to the computer training device.

The learning process in the conditions of EEE could be presented as a didactic system with a specific set of interacting components and management functions. At the same time the role of a manager is played by a teacher or EEE control module, the managed item is a student. The interaction between them occurs on the basis of technical means through transmission, perception and conversion of information flows in the interactive mode.

Management efficiency will be achieved upon condition of clearly defined objectives, algorithmic presentation of actions, methods and criteria for arranging the channels of direct communication and feedback.

In the general case, management of e-learning is directly aimed at solving the learning task (Rastrigin, Erenshtein, 1988), which means that the student shall acquire the specific amount of learning information U in the best possible way. The efficiency of the learning management depends on the learning algorithm Q and the personal characteristics and preferences of a student $\omega(t)$:

$$Q = Q(U, \omega(t)).$$

To solve this problem it is necessary to make the learning process adaptive depending on the individual characteristics and preferences of a student. Learning efficiency will be achieved by solving the adaptation task which is finding the smallest possible piece of the learning information which is optimal for studying having a certain set of individual characteristics $\omega(t)$ of a student:

$$U_{\omega(t)}^* = Q(U, \omega(t)) \rightarrow \min U,$$

where $U_{\omega(t)}^*$ is the optimal amount of the learning information which depends on individual characteristics and preferences of a student $\omega(t)$.

The management of the learning process in the electronic information and educational environment is cyclical in nature: the acquisition of each piece of the learning information $U_{\omega(t)}^* U_{\omega(t)}^* U_{\omega(t)}^* U_{\omega(t)}^* U_{\omega(t)}^* U_{\omega(t)}^* U_{\omega(t)}^* U_{\omega(t)}^* U_{\omega(t)}^* U_{\omega(t)}^*$ is followed by the analysis and checking the level of mastering the learning material, then the correction of the further course of the learning process based on the parameters of student model, then there is the transition to the next piece of information.

The main task of managing the learning process is determined by the target settings consisting in the improvement of the learning process, the increase in efficiency of knowledge acquisition, the formation of skills, practices, competencies, the development of cognitive abilities of students (Toktarova, 2015).

3. DESIGN OF THE PROGRAM OF E-LEARNING MANAGEMENT

At the same time the design of the mechanism of managing the educational and cognitive activities of students in the conditions of electronic information and educational environment shall be carried out gradually.

1. *The study of the control object.* At this stage it is necessary to obtain information about the student as a managed item (individual characteristics and abilities of a student, preferences, level of knowledge, professional characteristics, etc.) to build and fill a student model with the data.

2. *Design and development of the management program.* The success of learning and achieving the stated educational goals depends directly on the quality of the developed management program. The program of teaching management includes the learning objectives, methods and techniques used to achieve the goals, means of control and correction of the learning process, systems of monitoring and information gathering. The program involves the implementation of a range of individual educational learning paths according to the

parameters represented in the student model.

3. *Implementation of the developed program.* After determining the goal and management program there is the arrangement of student learning, directing him/her along an individual learning path based on the management algorithm. Each step tracks the position of a student against the objectives and the learning outcomes.

4. *Correction of the learning activities of students and management program.* In case of deviation of the position of a student from the planned learning objectives and learning outcomes it is necessary to correct the program and management algorithm. For this purpose, when designing the management program, it is necessary to establish the checkpoints to assess the current activities of a student and his/her results, as well as a set of corrective measures to modify the learning activity of a student and of the management program itself (Talyzina, 1984).

In general, the management scheme for the e-learning process in the conditions of information and educational environment can be represented as follows (Fig. 1).

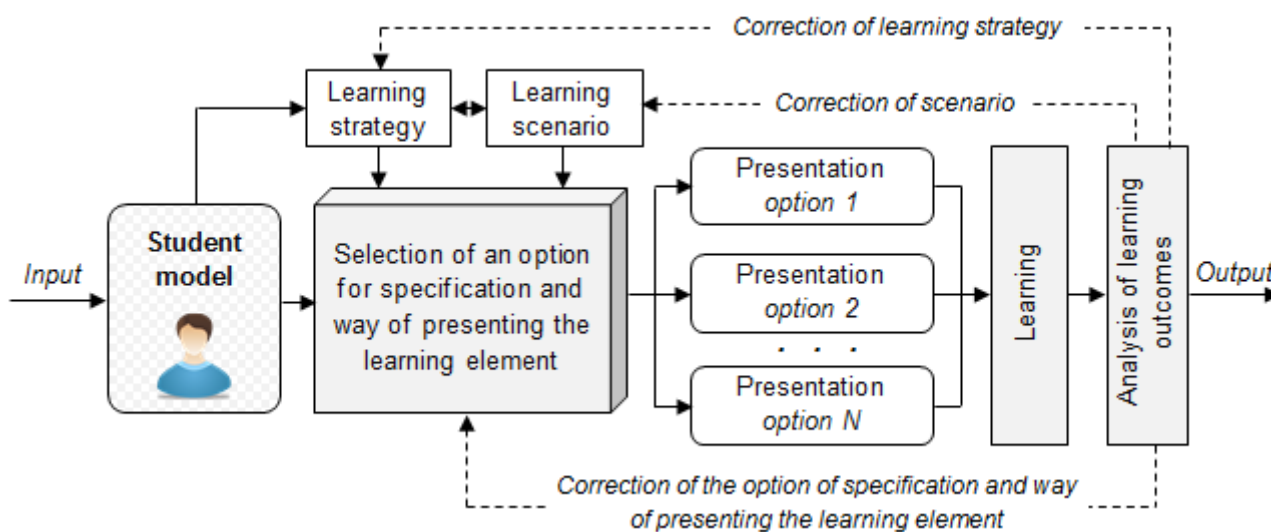


Fig.1. The management scheme for e-learning of students in the conditions of EEE.

At the same time the learning element means the autonomous piece of the learning material intended for the acquisition of the elementary unit of knowledge and skill.

Learning strategy reflects the most appropriate learning methods for a student selected on the basis of his/her individual characteristics and preferences represented in the student model. For example, less prepared students could be offered the reproductive learning methods, the advanced ones - problem and search methods.

The learning scenario or teaching scenario is characterized by a sequence of transitions from one learning element to another. This scheme was taken as a basis for the software module of management and building the learning scenarios which was successfully implemented and embedded in the EEE of the Chair of Applied Mathematics and Computer Science of the Mari state University (Certificate of State Registration of the computer program No. 2015612527).

Thus, the design peculiarities of the process of learning management in the conditions of information and educational environment involve careful didactic design. Optimally established management contributes to ensuring the integrity and efficiency of the acquisition of basic educational programs by the students, to improving the quality and efficiency of implementing the e-learning.

3. ACKNOWLEDGEMENT

The present work is supported by the Ministry of Education and Science of the Russian Federation (N 27.8640.2017/8.9).

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