

E-LEARNING EFFECTIVENESS IN MEDICAL STUDENTS' ABILITIES TO GENERALIZATION DEVELOPMENT

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Abstract. The author of the article analyzes the e-learning effectiveness in medical university students' abilities formation to identify the essential relations between different parts of object or phenomena as one of the fundamental characteristics of learning process. The article is made on the basis of experimental material research and represents indicators of students' skills to generalization development. Dynamics of students' abilities development allows to make a conclusion about mathematics e-learning significant contribution into generalization skills formation as the main characteristics of human cognitive activity. Modern information technologies in medical school education can be considered as a factor of intensive development of students' abilities to identify the essential relations within an object or phenomenon. E-learning transfers approximately fourth part of medical students to a higher level of abilities to objects and phenomena properties systematization.

Key words: e-learning, mathematical abilities to generalization, development, dynamics.

Development of medical students' abilities to analysis, synthesis, abstract thinking and generalization is extremely important [1,5]. The task of the university education is to form the appropriate level of students' knowledge and skills, to develop abstract and logical thinking as the key to successful self-education and further inclusions into the system of life-long education [2,5]. Research results on e-learning role in development students' analytical and synthetic skills [4] are provided, studying of e-learning efficiency in formation of medical students' abstract thinking are conducted [3]. However, the e-learning role in students' abilities to generalization development is still questioned. In this regard the research purpose was defined as studying of e-learning effectiveness in medical students' abilities to identify the essential relations between different parts of object or phenomena development. The following tasks were considered in our research: 1) to study clinical psychology faculty students' level of abilities to generalization at the initial stage of mathematics e-learning, 2) to analyze clinical psychology faculty students' level of abilities to identify the essential relations between different parts of object or phenomena at the final stage of mathematics e-learning in medical school.

Materials and methods of research. The testing of 30 first-year and second-year clinical psychology students was carried out. First-year students were tested as the starters of mathematics e-learning. Second-year clinical psychology faculty students were involved into mathematical e-learning testing after passing mathematics course examination. The experiment was held in

constant conditions for both groups of students: the research was held at 11 a.m. in the academic auditory. The research duration was about 20 minutes. The clinical psychology faculty students performed the testing independently without using any electronic devices. The testing was built on the basis of Atmhauer intelligence structure test including the scale of mathematical abilities determination.

Results. The results of the clinical psychology students' testing (table 1) represent medical university examinees' level of abilities to identify the essential relations within an object or phenomenon at the initial and final stages of mathematics e-learning.

Table 1. Results of testing in each task respectively.

N	Examinees, succeeded in a task (%)		N	Examinees, succeeded in a task (%)	
	1 year at the initial stage of mathematics e-learning	2 year at the final stage of mathematics e-learning		1 year at the initial stage of mathematics e-learning	2 year at the final stage of mathematics e-learning
1	100%	100%	11	36%	63%
2	93%	88%	12	71%	81%
3	86%	81%	13	57%	75%
4	86%	75%	14	29%	25%
5	57%	88%	15	21%	50%
6	86%	88%	16	21%	63%
7	57%	69%	17	29%	63%
8	57%	63%	18	43%	63%
9	29%	38%	19	43%	38%
10	71%	88%	110	29%	25%

At the initial stage of mathematics e-learning each two tasks from twenty were difficult for 75% of examinees. Then at the final stage of mathematics e-learning such difficulties were not found at all. In six tasks from twenty (30% of total number of questions), less than a third of first-year medical students could give the correct answer. The second-year students experienced the same difficulties just in two tasks from twenty (10% of total number of tasks). At the initial stage of mathematics e-learning half of examinees had problems in nine tasks from twenty that constituted 45% of questions number. Half of clinical psychology faculty second-year students had the same problems only in four tasks from twenty. The tasks number with difficulties for 20% of the first-year students was equal to seven, and for the second year examinees - five. The quantity of questions with more than 90% of students' correct answers was 5% at the initial

stage of mathematics e-learning , and at the final stage of mathematics e-learning – already 10% of tasks number. In general, in 70% of tasks the second year examinees answered the offered questions more surely and more successfully than the first-year students . And in each three tasks from twenty the second year examinees showed the result exceeding indicators of first-year students twice. At the final stage of mathematics e-learning the result was improved in each five questions from twenty by a third of the second year students. The research results can serve as a proof of mathematics e-learning efficiency in development process of students' abilities to generalization. Dynamics of students' abilities development allows to make conclusion about mathematics e-learning significant contribution into generalization skills forming as the main characteristics of human cogitative activity. Modern information technologies in medical school education can be considered as a factor of intensive development of students' abilities to identify the essential relations between different parts of object or phenomena. E-learning transfers approximately fourth part of medical university students to a higher level of abilities to objects and phenomena properties systematization.

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