THE PEDAGOGICAL POTENTIAL OF E-LEARNING ENVIRONMENTS TO IMPROVE MATHEMATICAL AND SCIENTIFIC TRAINING OF ENGINEERING PERSONNEL

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ABSTRACT

This article explains that mental activity in e-learning environments was closely linked to the implementation of the following principles: coding, modeling, visualization and cognitive. The pedagogical potential of e-learning environments is reflected in the following resources: the creation of simulated situations (situations of success, the introduction of the adversarial elements, etc.); granting of the right of the student to choose learning path with its subsequent adjustment; intensification of training and learning activities through the provision of professional orientation training, e-learning technologies; the integration of the content of the mathematical and natural sciences with elements of professional knowledge, founded on shared concepts studied, integration links, integration methods, forms and tools.

Keywords: Electronic, educational, mathematical, life, engineers, professional, training, knowledge.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

Exploring the influence of technical means of teaching the process of perception and comprehension, we conclude that new educational technology not only contribute to the intensification of the process of learning, but also have a significant impact on the formation and assimilation of concepts and reasoning, determination of cause-effect relationships, etc. This idea is particularly important in the Organization of mathematical and scientific training of engineering personnel at the University.

The above analysis leads us to understand that knowledge and integration of perceptual modality students is a necessary condition for the improvement of the learning process as a whole. At the same time, it should be noted that, in practice, to avoid information overload is not recommended to use all channels of perception at the same time.

Favorable atmosphere for interaction of agents in e-education is greatly facilitated by environment and maintained its friendly interface. User friendly interface is not only easy navigation for users, but also allows you to vary the amount of information provided, its placement, font and color; apply interactive and multimedia objects. This is possible thanks to the implementation of electronic educational properties such as environment multimedia, virtual, openness, adaptability and manufacturability. Let's look at each of the presented aspect in more detail.

The amount of information. Used teaching materials should be informative, structured, clear and compact. The latter requirement is due to the fact that a large amount of information was difficult to monitor screen. The consequence can be a scattering of attention, fatigue, reduced level of motivation. From the point of view of psychology, didactics of engineering and

ergonomics, the best option is the one in which the material is fully visible on the screen without vertical scrolling.

Font and composition of entire text should be combined harmoniously with each other and correspond to a single style. For the submission of electronic information in text form and ensure its readability it is advisable to use lowercase sans-serif font. Given the nature of the content of the mathematical and natural sciences (sign-symbol feature, saturation formulas and the predominance of information graphics), recommended for its "compression" and remembering to use not only the text, but also table, graphic representation (graphs, smart cards, clusters, frames, etc.) [2]. Thanks to the openness property, manufacturability and multimedia in electronic educational environment makes it possible to use available services that facilitate the process of creating intelligent compositions and structuring training material.

Color characteristics influence not only on the psychological and physical and emotional condition of the students. Emotions are subjective experiences and connected with the process and the result. According to psychologists and didactics, it is an emotional state affects the concentration of attention, interest in the subject studied, memorization of information and its subsequent reproduction. In this aspect of interest to us are the work of reflecting the relationship of emotional and cognitive components of training and learning activities. Researchers have drawn attention to the fact that knowing the features of each color, you can create a special image, cause certain associations and emotions [1].

Sounds like to use videos and animations implement primarily didactic function. Otherwise it leads to dispersion of attention, fatigue of students and, as consequence, reduce the effectiveness of the training. In addition, the videos must display and simulate events, facts, phenomena and processes in real mode is impossible or difficult with a sufficient degree of clarity to illustrate and explain to students. This is of particular importance when studying natural sciences future engineers. In particular, the use of dynamic animation to demonstrate the virtual experiments, the physical and chemical processes, natural phenomena not only promotes effective programs, but also allows you to focus students on study problem [3;5].

Thus, the electronic educational environment becomes possible integration of psycho-physiological characteristics and individual personal characteristics of students, providing an atmosphere of cooperation and interaction between stakeholders in dialog box training.

According to the logic of research turn to next substructure educational-cognitive activity of students. Identify potential e-learning environments in the development of cognitive processes such as attention, memory and thinking. A study of this issue is important because it allows you to define the specifics of formation of cognitive activity cluster component competencies when studying mathematical and natural scientific disciplines in the context of e-learning environments.

Attention is a selective focus perception on one or another object. For human thinking it is the basis for correct understanding and problem solving. E-learning environments has significant potential for concentration of students. Firstly, this is possible thanks to the use of animated, audiovisual effects, photos, diagrams, graphics, supporting interest in this material.

Secondly, according to psychological and pedagogical studies in traditional lecture-seminar approach decreases the level of attention of students through 20-25 minutes after the beginning of classes.

This is due to several causes, among which the most significant are the low level of interactivity, orientation to the "average" student (excluding his personality-individual characteristics). E-learning environments this problem can be solved through the implementation of the principle of feedback. In pedagogical practice adopted to allocate two types: internal (students independently analyze and adjust their actions) and external (specified function performs a lecturer or tutorial) [4]. Resulting in a permanent dialogue: "subject entity", "the subject content. It helps to activate the attention of students and enhance the effectiveness of the training process in General.

Memory. According to the bilateral law context, attention and memory, the higher the level of attention to the subject, the greater the amount of information he remembers. Memory is a complex mental process consisting of several private processes associated with each other: imprinting, preservation, reproduction of information, as well as her forgetting.

Effective allocation of formula information. Mechanical display text formula leads to a decrease in the level of attention and increased fatigability students.

The use of structural schemes to provide information to overcome difficulties associated with the image sign-symbolic imagery, high level of abstractness of concepts studied. It enhances perception and memorizing information in e-learning environments. In many ways this is achieved thanks to the implementation of the principle of cognitive visualization.

The rendering process represents the collapse of information units in a vivid image that can be deployed. Intuitive image underpins mental and practical action. Mathematical and scientific disciplines have a significant potential for the implementation of this principle.

Note that the encoding and visualization training information contribute to more intensive learning on learner guides search systemic linkages and patterns.

As mentioned above, led to the consideration and selection features of percolation in electronic didactic Wednesday such a learning process as a way of thinking. This question is important because it allows you to justify the conditions of the State of intellectual comfort students in e-learning environments.

The State of intellectual comfort e-learning environments could be achieved through the creation of a situation of success. The latter is a deliberate, organized by a combination of the conditions under which implements the ability to achieve significant results in the activities.

The training material is perceived on a personal level, if he experienced as a vital problem. This, in turn, mobilizes and consequently develops the structure of intellect. Given the nature of mathematical and natural science and engineering technical personnel training, personality-meaningful content is ensured through the simulation of processes and objects related to future professional activities, conduct virtual tours and remote experiments. E-learning environments thanks to virtual properties, openness and multimedia.

Modeling processes of specific future careers of engineers, is based on the integration of the content of the mathematical and natural sciences with elements of professional knowledge. Integration based on shared concepts studied, not only allows you to include learning objectives related to the future professional activities, but also intensify training activities. In

a lot of this is achieved through the use of in the context of e-learning environments various teaching, communication and instrumental technology.

Integration of communication and pedagogical technologies promotes diversity used in preparation methods, educational environment and forms of training and learning activities of students in e-learning environments. Such an approach eliminates one of the common causes of a negative attitude to learning-failure in addressing educational tasks simulated in learning of problem situations that allow you to include personality in the thought process. This is due to property of interactivity, as well as the principle of feedback. When this becomes possible, error correction is carried out actions and decisions that created a special emotional background and mental attitude. As a result, the student is not experiencing fear and uncertainty when answering the question or task.

For proof, consider the ideas presented by the process of solving tasks of a student in e-learning environments. Its specificity is due to the fact that the corrective effect of content (teacher) motivation to search, provides gradation teaching material, identifies and takes into account the level of training. The system in case of erroneous decisions gives guiding instructions, directing action thus students on finding the right solution.

REFERENCES

1. Ардеев А. Х. Образовательная информационная среда как средство повышения эффективности обучения в университете: монография / А. Х. Ардеев. – Харьков, 2012. –124 с.

2. Войко Р. А. Психологические исследования информатизации образования / Р. А. Войко, – М., 2011. –213 с.

3. Выготский Л. С. Психология развития человека / Л. С. Выготский. – М.: Изд-во Смысл; Изд-во Эксмо, 2005. –1136 с.

4. Роберт, И. В. Методология информатизации образования [Электронный ресурс]; URL: http://ito.su/40/plenum/Robert.html

5. Shadiyev R.D., Turdiyev Sh.R. On questions of particularities of teaching mathematics in technical higher education institutions (HEI Austrian Journal of Humanities and Social Sciences № 9–10.Vienna , 2014. Pp.141-144.