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Improving the Information Competence of a Technical University Student Using Digital Technologies

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Annotation: The concept and structure of information competence was considered, the specifics of the formation of competence of future specialists with new information technologies who use computer tools to develop optimal management decisions of particular importance in the development of innovation of society were seen.

Keywords: information competence, IT competence, information technology, management decision making, information technology in the innovation development of society.

Introduction

In modern conditions of computer and information support, the requirements of employers for graduates of educational institutions of higher professional education have changed. One of the most important requirements is the ability of a university graduate to master information technologies. In the intellectual labor market, specialists with a high level of information culture and competence become in demand. A modern specialist should be able to receive, process and use information using computers, telecommunications and other means. The task arises in the formation of such a person who is ready to update knowledge throughout his life. The ability to choose the necessary information, systematize it, assimilate it at a high level, navigating the ever-increasing information flow is an important quality of a university graduate. To do this, he must have information competence. Before defining what the concept of "information competence" is, let's turn to understanding the essence of competence and competencies. In the pedagogical literature, there are different points of view on the understanding of competence and competencies.[1,8-9]

The computerization of production has put forward the task of training specialists who will effectively use computer technologies in their future professional activities. In the information society of the XXI century, only those specialists who will not only master the basic courses of university programs, will learn how to apply the acquired knowledge in traditional and non-traditional situations, and most importantly, graduates of the university will have the skills of independent work with information. Today's employer is interested in such an employee who knows how to think independently, be able to competently and creatively approach the resolution of various problems. Modern society needs such a specialist who is able to continuously replenish his knowledge, improve his competence and competencies. Practice has shown that insufficient attention is paid to teaching students independently and rationally organize their educational and cognitive activities. Therefore, university graduates cannot quickly adapt to the continuously updated new information technologies. A.V. Khutorskoy identifies the following list of key educational competencies: value-semantic, general cultural, educational-cognitive, informational, communicative, social-labor and personal self-improvement competence [3]. At each level of education, starting from secondary school, students should form key educational competencies - a system of universal knowledge, skills, experience of independent activity and personal responsibility. In order for young specialists to be competitive in the modern labor market, where organizations and enterprises are experiencing a shortage of professionals, universities need to train students with developed key educational competencies at a high level.

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Mixed Reality technology provides an opportunity to combine two visual worlds: real and virtual [1,2-7]. Despite the fundamental differences between augmented and mixed reality technologies, the main optical circuits and solutions used in these technologies largely repeat each other. The main differences are the mandatory stereoscopy of the optical system and the "wearability" of the mixed reality device. Naturally, there is a significant difference in the hardware and software stuffing of these devices.[7-9]

In mixed reality systems, images of two worlds are combined: real and virtual. The real and virtual worlds are visualized using augmented reality technologies, which allow combining images of the virtual and real worlds, and the image of the virtual world is synthesized using virtual reality technologies. The main specificity associated with the synthesis of the image of the virtual world is the need to link it to the real world. In this case, the binding must be both geometric, i.e. all objects of the virtual world must be within the real world, and optical, when the optical properties of the real world affect the visibility of objects of the virtual world and vice versa. Inconsistency between the visibility of objects in the real and virtual worlds can cause visual perception discomfort.[1,3-9]

In Education. MR simplifies simulation training. Future doctors will be able to train skills on holograms of patients, and the military will be able to simulate combat situations and project them into reality. The company will not have to send trainee engineers on a business trip to industrial facilities - it is easier to show a hologram.[1,2-6]

Difficulties in implementing MR.

The underdevelopment of technology is associated with technical difficulties. Here are the main difficulties: [2,3-5]

1. Lack of interaction scenarios. MR assumes that a person can contact virtual objects in the real world. In order for such contacts to be natural, developers must work out scenarios for interaction between users and a digital object. In other words, the program must remember the user, his behavior and learn how to interact with him. Until programs learn how to do this, there will be no qualitative leap in MR
2. Bulkiness of devices. So far, only headsets that give an extended AR experience are really compact and accessible to the masses. It is unknown in principle about devices that offer a full-fledged MR experience and are available to consumers at the same time
3. Lack of input tools. MR devices that reproduce holograms must simultaneously read user actions in order to provide an experience of interacting with a digit. Existing devices today can do this only in the context of using headsets, such as Magic Leap. The first device that gives such a response and reads a person's actions can be considered a glove that reproduces an aerotactile hologram.

There are too few examples of mixed reality implementation in mass access. The most famous are the HoloLens and Magic Leap 1 headsets. Their capabilities are far from our ideas about MR. In the corporate segment, MR is used for employee training, visualization of sales facilities and demonstration of production capabilities.

Conclusion

In the foreseeable future, we are unlikely to be able to distinguish between virtual and mixed reality. These technologies have already changed the way we are used to creating things and will soon help everyone to look at the world from a different angle. Very soon MR will fully integrate into our everyday life and everyone will experience the gamification of reality. Or almost everyone. We expect a qualitative leap from MR. But so far, innovators are only developing technologies and attracting investments.

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