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PROBLEMS OF IMPROVING KNOWLEDGE AND PROFESSIONAL COMPETENCIES IN NETWORK TECHNOLOGIES

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***Abstract:** the article analyzes a study on the problem of using SMART-technologies in a university. The purpose of the article is methodological recommendations on the use of SMART-technologies and the Internet of Things (IoT-Internet of Things) in a higher educational institution teaching “Network Technologies”, the basic principles of their functioning and basic characteristics are formulated.*

As research methods, the author used interpretation, comparative analysis and generalization of the scientific literature on the problem; an example of tools of SMART-technologies and the Internet of Things (IoT-Internet of Things) analyzes the relevance and validity of their use from a didactic point of view, focuses on the need to constantly improve the learning process with their help.

The author identified the main provisions, software and electronic information and educational resources were developed to implement the training opportunities of network technologies in an e-learning environment; the interdisciplinary relevance of the discipline has been improved, that is, the integration of theoretical data with practical and laboratory studies; teaching the discipline "Networking Technology" in pedagogical universities using an adaptive learning system and a virtual learning environment Moodle LMS. The proposed key ideas of the technology under consideration are scientifically substantiated, contribute to the individualization of the educational process and the development of effective private subject-oriented technologies in teaching students of a pedagogical university.

***Keywords:** SMART technologies, IoT-Internet of Things, interactive whiteboard, higher education institution, Flipped classroom, Blended learning, electronic training systems, network technologies, SMART tutorial.*

ПРОБЛЕМЫ ПОВЫШЕНИЯ ЗНАНИЙ И ПРОФЕССИОНАЛЬНЫХ КОМПЕТЕНЦИЙ В СЕТЕВЫХ ТЕХНОЛОГИЯХ

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***Аннотация:** В статье анализируется исследование проблемы использования SMART-технологий в вузе. Целью статьи являются методические рекомендации по использованию SMART-технологий и Интернета вещей (IoT-Internet of Things) в вузе с преподаванием «Сетевые технологии», сформулированы основные принципы их функционирования и базовые характеристики.*

В качестве методов исследования автор использовал интерпретацию, сравнительный анализ и обобщение научной литературы по проблеме; На примере инструментов SMART-технологий и Интернета вещей (IoT-Internet of Things) анализируется актуальность и обоснованность их использования с дидактической точки зрения, акцентируется внимание на необходимости постоянно улучшать процесс обучения с их помощью.

Автором определены основные положения, разработаны программные и электронные информационно-образовательные ресурсы для реализации обучающих возможностей сетевых технологий в среде электронного обучения; повысилась междисциплинарная актуальность дисциплины, то есть интеграция теоретических данных с практическими и лабораторными занятиями; преподавание дисциплины «Сетевые технологии» в педагогических вузах с использованием адаптивной системы обучения и виртуальной среды обучения Moodle LMS. Предлагаемые ключевые идеи рассматриваемой технологии научно обоснованы, способствуют индивидуализации учебного процесса и разработке эффективных частных предметно-ориентированных технологий обучения студентов педагогического вуза.

***Ключевые слова:** SMART-технологии, IoT (IoT-Internet of Things) - Интернет вещей, интерактивная доска, высшие учебные заведения, Flipped classroom, Blended learning, электронные системы обучения, сетевые технологии; SMART учебник.*

The main direction of the introduction of SMART - training is the formation of information, communication and technological competence of teachers in the electronic environment. In the wake of the rapid development of information and communication technologies at the end of the last century, the “digital generation” has grown, for which smart devices and gadgets using “advanced” technologies are essential elements of living space. The transition to a wireless network, the spread of smart terminals, the progression of SMART devices, the expansion of a mobile office is a new quality of society in which the combination of the use of technical tools, services and the Internet by trained people leads to qualitative changes in the interaction of subjects, allowing to obtain new effects: social, economic, educational [1].

In recent decades, he has attracted great attention of experts from various fields of research. Since training can be carried out at anytime and anywhere in the context of intellectual education using intellectual devices, and the number of courses within the framework of intellectual education has increased significantly, the question of choosing the appropriate course plays an important role in the process of modern education and went on to determine the curriculum that is suitable for students accurately and efficiently [2].

The purpose of the article is methodological recommendations on the use of SMART-technologies and the Internet of Things (IoT-Internet of Things) in a higher educational institution teaching “Network Technologies”, the basic principles of their functioning and basic characteristics are formulated.

As research methods, the author used interpretation, comparative analysis and generalization of the scientific literature on the problem; an example of tools of SMART-technologies and the Internet of Things (IoT-Internet of Things) analyzes the relevance and validity of their use from a didactic point of view, focuses on the need to constantly improve the learning process with their help; methodological recommendations, recommendations on the study, analysis of the state of creation of electronic information educational resources in foreign countries and republics and their use in higher education institutions; with the help of SMART-technologies an intelligent virtual learning environment was formed; development and implementation of electronic information and educational resources in the field of network technologies; Integration development of lessons on network technologies was developed to solve problems, choose alternatives, promote ideas that lead students to independent, creative work; methodological development of the content of educational materials, laboratory and practical tasks for the independent development of students; improving the interaction between students, the development and effective use of training programs developed by the Moodle LMS

for collective and individual work on information in the learning environment; the methodological foundations of teaching network technologies of natural sciences using blended learning technologies have been tested.

An intelligent virtual training system consists of Smart devices, Smart Classroom - a smart class, Smart campus - a smart collaboration network, Smart Lab - an intellectual laboratory room and tools, Smart Cloud - an intellectual Internet service system, etc. Here are some of the features of teaching the discipline "Network Technologies" in the audience, which are controlled by the SMART system - Auditorium, which is an intellectual virtual learning environment.

This method addresses the following issues [3]:

- *Modeling the classroom with elements of SMART-technology and IoT - Internet of Things;*
- *Combining science with teaching methods;*
- *Development of a project for the implementation of the discipline "Network Technologies" training using electronic information and educational resources.*
- *Set the conditions and limitations of the effective application of this method.*

We provide information on the SMART - technology-based learning modeling process at the Learning Activity stage, with the aim of introducing science-based electronic information and educational resources and open source software Moodle LMS in an intellectual virtual learning environment equipped with SMART technologies.

We believe that the use of the “Flipped classroom” model of Blended learning - a mixed education technology in teaching network technology in higher education institutions - will be effective. “Flipped classroom” is a learning strategy. It is the transition to a typical model of "overthinking" the class, which means that students will gain new knowledge. In this case, students independently read a new topic before class, and then during the class discuss the discussions and problem-solving that will help them to update and learn new knowledge. Using the revised taxonomy of Blum (2001), the model proposes students to independently perform low-level cognitive tasks (learning) outside of classroom time and then engage them in high-level cognitive activities (applications, analyzes). They can use the help of peers and teachers during the lessons. Of teaching the discipline "Network Technologies" developed technology map and SMART - methodology for using the learning-based learning system.

In conclusion, one of the most important areas of education system reform is systematic integration and management of the educational process with information and telecommunication technologies. Priorities in the reform process include

organization of the learning process and radically re-creating its content, the pedagogical activity of the teacher in the computerized environment, and the organization of the student's learning process.

In the higher education system, training in the discipline "Network Technologies" on the basis of SMART technologies, the use of simulator software in the organization and evaluation of laboratory classes will increase the effectiveness of training.

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