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IMPLEMENTATION OF SMART TECHNOLOGIES IN THE INTERNAL ECOSYSTEM OF THE UNIVERSITY

Abstract

This article is devoted tothe impact of smart technologies to the educational process at the university.In the modern age of digital technologies - smart technologies as an innovational and intellectual tool in development of the system of higher education formactual skills for enhancing learning process for students and teachers.The characteristic features ofproblems in the adaptation and work of a teacher in a digital educational environment were identified. The results demonstrated that the implementation of smart technologies in the teacher's personal educational environment brings positive changes and increases the overall performance of pedagogical process. The use of modern technologies and tools improves student learning for teachers and in accordance with the barriers to obtaining these tools the authors propose solutions. They discovered that the teaching stuff's attitude towards digital sphere is a key factor for mastering smart technologies. The authors conclude that the impact of smart technologies on the educational process at the university can be positive, as long as they are implemented effectively and with consideration for the needs of students and faculty.

Keywords: digital technologies, smart technology, digital educational environment, internal ecosystem of a university, teacher's personal educational environment.

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ИМПЛЕМЕНТАЦИЯ СМАРТ ТЕХНОЛОГИЙ В ВНУТРЕННЕЙ ЭКОСИСТЕМЕ УНИВЕРСИТЕТА

Аннотация

Статья посвящена влиянию смарт технологий на образовательный процесс в вузе. В современную эпоху цифровых технологий смарт-технологии как инновационно-интеллектуальный инструмент развития системы высшего образования формируют у студентов и преподавателей актуальные навыки повышения эффективности учебного процесса. Авторами выявлены характерные особенности проблем

адаптации и работы педагога в цифровой образовательной среде. Результаты исследования показали, что внедрение смарт-технологий в персональную цифровую образовательную среду педагога приносит положительные изменения и повышает общую эффективность учебного процесса. Использование современных технологий и инструментов педагогами способствует улучшению подготовки студентов. Авторы предлагают собственные пути решения конкретных проблем. Выявлено также, что отношение преподавателей к цифровой сфере является ключевым фактором для освоения смарт технологий. Авторы приходят к выводу, что влияние смарт-технологий на образовательный процесс в вузе может быть положительным, если они внедряются эффективно и с учетом потребностей студентов и преподавателей.

Ключевые слова: цифровые технологии, смарт технологии, цифровая образовательная среда,внутренняя экосистема университета, персональная образовательная среда педагога.

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УНИВЕРСИТЕТТІҢ ІШКІ ЭКОЖҮЙЕСІНДЕ СМАРТ ТЕХНОЛОГИЯЛАРДЫ ИМПЛЕМЕНТАЦИЯЛАУ

Аңдатпа

Мақала университеттегі оқу үдерісіне смарт технологиялардың ықпалына арналған. Заманауи цифрлық технологиялар дәуірінде смарт технологиялар жоғары білім беру жүйесін дамытудың инновациялық және интеллектуалды құралы ретінде білім беру үдерісінің тиімділігін арттыру үшін студенттер мен оқытушылардың тиісті дағдыларын қалыптастырады. Авторлар цыфрлық білім беру ортасында оқытушының бейімделу және қызмет ету мәселелерінің ерекшеліктерін анықтады. Зерттеу нәтижелері оқытушының жеке цифрлық білім беру ортасына смарт технологияларды енгізу оң өзгерістер әкелетінін және жалпы білім беру үдерісінің тиімділігін арттыратынын көрсетті. Оқытушылардың заманауи технологиялар мен құралдарды қолдануы студенттердің дайындығын арттыруға көмектеседі. Авторлар нақты мәселелерді шешудің өзіндік жолдарын ұсынады. Авторлар смарт-технологиялардың университеттегі оқу үдерісіне әсері тиімді және студенттер мен оқытушылардың қажеттіліктерін ескере отырып жүзеге асырылса, оң болуы мүмкін деген қорытындыға келеді.

Түйін сөздер: цифрлық технологиялар, смарт технологиялар, цифрлық білім беру ортасы, университеттің ішкі экожүйесі, оқытушының жеке білім беру ортасы.

Introduction. The 21st century is a time of widespread use of information technology in all environments, and especially in the educational environment, which is becoming an increasingly difficult task for universities that are focused on constantly achieving high performance through the use of cutting-edge tools. Education is a fundamental pillar in the intellectual development of every person, therefore, the modernization of digital processes, including local university platforms, is necessary to transform the educational environment in step with the times. The integration of technology in education has transformed the way students learn and teachers teach. Information technology has made education more accessible and efficient. With the use of technology, students can access learning materials from anywhere at any time. They can also collaborate with other students and teachers from different parts of the world, which has expanded their knowledge and cultural awareness. Teachers can use technology to enhance their teaching methods. They can create interactive and engaging learning materials that cater to different learning styles. Technology also allows teachers to monitor student progress and personalize their learning experience.

The goals of Smart education are the development of a person's personality as a subject of interaction, the formation of Smart competence of subjects as part of their information competence of the Smart culture of subjects, the culture of interaction and relationships in a Smart environment.

Smart culture is an integral part of information culture, media culture, it is based on them and at the same time develops them. Personal Smart-competence and Smart-culture become a condition and a means of development and self-development of the subject. The likelihood that Smart technologies will change the education system and be implemented is real. This is manifested in the introduction of the principles of lifelong learning; application of the latest distance learning technologies and e-learning technologies. The impact of

smart technologies on the educational process at the university can be positive, as long as they are implemented effectively and with consideration for the needs of students and faculty. Smart technologies can help to create a more engaging, collaborative, and personalized learning environment that promotes student success and prepares them for the challenges of the future. In this regard, a necessary tool for the formation of a Smart society is Smart education.

Materials and Methods. Universities are creating various data analysis methods to cope with the complexity of learning and analyze a large amount of information to improve the quality of the students' learning process, as well as to create a comfortable personal digital educational environment for teachers. In educational institutions, the collection and analysis of data is a fundamental element for making the right decisions focused on improving the overall performance of the educational organization, helping to evaluate the performance of each student and teacher [1]. In the course of the study, a theoretical and methodological analysis of domestic and foreign scientific works was carried out, which confirms that modern society is in line with a new technological wave based on nano-, cyber- and other innovative technologies. One of the components of this wave is Smart-technologies, Smart-resources, connected in Smart-systems.

This research was completed with the following research methods being used: the method of generalization, the method of abstraction, the method of analogy, the system method, interview, survey, statistic data procession methods. To conduct a study of the possibilities of implementing Smart technologies in the design of a personal digital educational environment for the individualization of the learning process, we analyzed, first of all, the essence of approaches to defining a personal educational environment (PEE), a personal digital educational environment (PDEE), and highlighting its structural components.

At Karaganda Buketov University, an experiment was conducted among teachers of the Faculty of Foreign Languages using an empirical research method on the topic: "Implementation of smart technologies in designing a teacher's personal digital educational environment in conditions of distance learning at a university". The purpose of the experiment was to identify problems in the adaptation and work of a teacher in a digital educational environment. The experiment was conducted in the form of a survey with 15 questions in. Survey participants had the opportunity to make suggestions for improving the local educational environment.

Results and Discussion. The role of smart technologies in the field of education consists of four parts: they are included as part of the curriculum, as a learning system, as a learning aid, and as a tool to improve the entire pedagogical process. Technology has transformed education from passive to interactive. Interactive education is essential in corporate and academic environments [2, 3]. In the first case, it is used to help teachers conduct the pedagogical process differently than it was done before. In the latter, it aims to create curiosity in the minds of students.

Visual interactive images always have more appeal than speech [4, 5]. The use of projectors and visual aids in the teaching process is another form of important technological use. Universities use tools such as PowerPoint presentations to make learning interactive and fun [6]. The technological use of things like projectors can increase the level of interaction and interest, as well as increase student motivation. Students like to see eye-catching visuals and something that encourages them to think and not just read the text. Technological developments such as digital cameras, projectors, various software, computers, etc.; all this has become a great source for teachers to help students understand the material easily. It must be understood that the visual explanation of concepts makes learning interesting and most enjoyable for students [7]. They can participate more in the classroom, and most importantly, teachers get the opportunity to make their classes more interactive and interesting.

The analysis of the data obtained during the experiment showed that the implementation of smart technologies in the teacher's personal educational environment brings positive changes and increases the productivity of students and teachers' activity. According to the survey, 52.1% of the respondents claimed that they had adapted well to the conditions of distance learning, while 43.8% rated their adaptation to the digital educational environment as satisfactory, and only 4.2% of the respondents answered that they had adapted poorly (Figure 1).
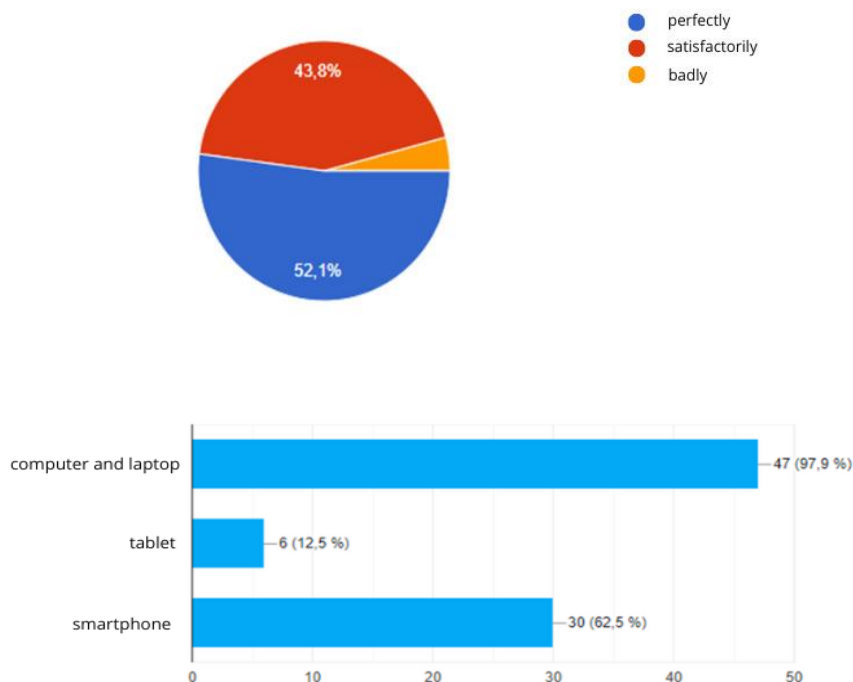
Figure 1. Adaptation of the respondents to the conditions of distance learning

The majority of respondents, namely 45.8%, reported that their level of motivation to conduct the educational process online had increased, 39.6% of respondents claimed that their level of motivation had not changed, and 14.6% reported that their level motivation had decreased (Figure 2).
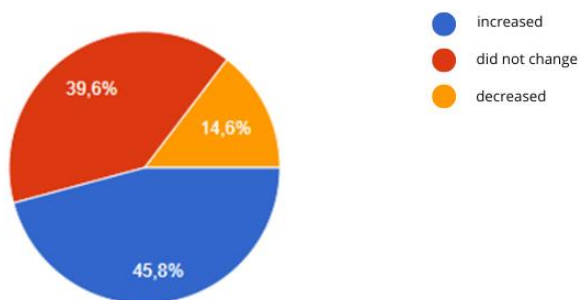

Figure 2. The level of motivation of the respondents

In accordance with the data obtained on how teachers today prefer to use the smart environment and how this affects their pedagogical process, it was found that the use of modern technologies and tools improves student learning.For teachers, the transfer of knowledge in a smart environment becomes very easy, convenient, and effective. 97.9% of respondents use personal computers or laptops for distance learning, 62.5% of respondents use mobile phones, and the remaining 12.5% of respondents use tablets (Figure 3).

Figure 3. Preferences of teachers in smart tools use

66.7% of the teachers surveyed prefer the implementation of practical tasks with subsequent control, 58.3% of the respondents prefer the placement of theoretical material for self-study by the student, 37.5% of the respondents prefer online lectures and the remaining 2.1% prefer the placement of materials of all types for students on an LMS like Moodle, where the system can evaluate and track the activity of students (Figure 4).

Figure 4. Preferences of teachers in delivering educational materials
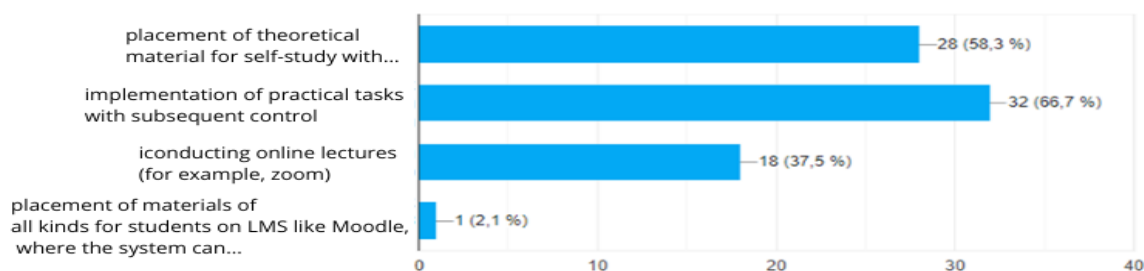
Educators in our modern society are facing huge challenges due to the rapid development of technology [8, 9, 10]. Modern technologies require that teachers learn how to use them as part of their pedagogical process. As technology continues to advance, it becomes increasingly important for teachers to stay up-to-date and proficient in using modern technologies as part of their pedagogical process. This is because technology can be a powerful tool for enhancing student learning and engagement, and can help teachers to better meet the diverse needs of their students. It is important to note that simply having access to technology is not enough to improve student learning outcomes. Teachers must also be trained in how to effectively integrate technology into their teaching practice, and how to use it to support and enhance their existing teaching methods. Consequently, these new technologies increase the need for teacher training. Based on practice, we can say that the attitude of teachers to smart technologies is a key factor in the successful implementation of technologies in education.Practice also shows that teachers do not always have a positive attitude towards smart technologies, and there is a risk that their negative attitude may lead to the failure of the implementation of smart technologies in education.The most frequent barriers to mastering smart technologies by teachers are: lack of time; lack of access; lack of resources; lack of experience and lack of support from the university.

For example, a survey conducted at Karaganda Buketov University among teachers of the Faculty of Foreign Languages showed that 45.9% of respondents report poor quality of the Internet at the university, 37.5% of respondents complain about regular technical failures, 27.1% did not encounter problems, 2.1% complain about the inability to download the necessary material, another 2.1% complain that there are computers in the offices, but there are no speakers, the remaining 2.1% of respondents complain that browsers are not updated, the Word program does not workproperly, and its analogue is inconvenient in use (Figure 5).
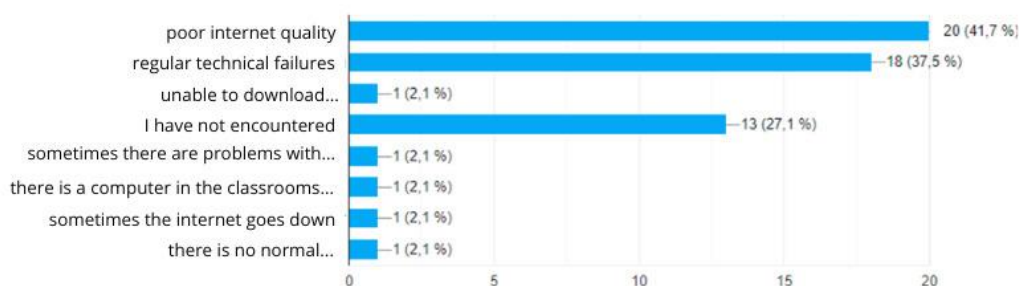

Figure 5. The most frequent barriers to mastering smart technologies by teachers

Such barriers need to be detected and eliminated. These barriers need to be identified and removed. Implementation of technology in any institution requires a high degree of organization as well as a lengthy planning process involving many different professionals, and since any implementation requires an extensive process with different steps, there is a need to focus on ways to support the effective implementation of

technology in education. Firstly, to provide the institution with the necessary equipment and Internet connection, and secondly, to ensure the competence of teachers in the use of technology. If teachers are not provided with effective training from the university, they do not fully use smart technologies and do not realize the importance of new technologies in the framework of the pedagogical process and continue to use traditional methods, and this serves as an obstacle to the integration of smart technologies into the modern education system.

The most common mistake educators make is copying the activities they use as part of the traditional teaching process. However, it is important to understand that a smart environment is not only a different style of teaching, it is also a different way of thinking.Methods, activities and approaches should also be different and adapted to the smart environment.

As part of a survey at the Faculty of Foreign Languages, teachers were asked a question to identify additional tools in the course of conducting a distance pedogogical process.41.7% of respondents use only what the university offers, the other 54.2% use additional materials and applications, such as google tools, jamboard, classroom, web 2.0. (Figure 6).
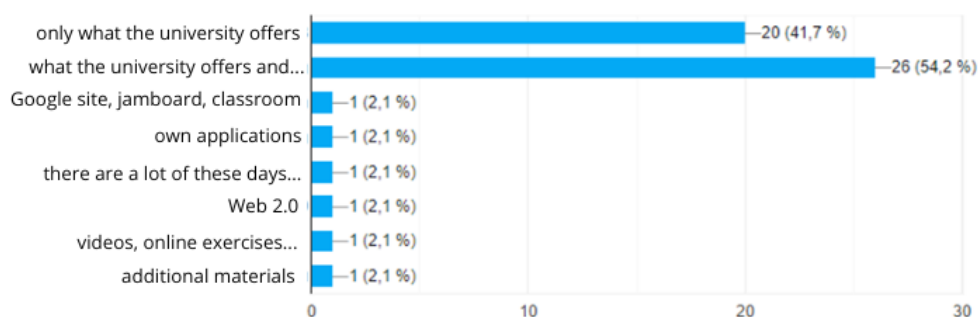

Figure 6. Extra tools used by teachers in a distance pedagogical process

A smart environment is not only about the interaction between a student and a teacher, it is also about professional growth. Thanks to smart technologies, teachers have the opportunity to attend various online courses, trainings, seminars, conferences, etc. while saving time and other resources. Additionally, smart technologies can be used to monitor teacher performance, identify areas where improvement is needed, and provide feedback and support to help them develop their skills. In a smart environment, professional growth is seen as an ongoing process, rather than a one-time event. Teachers are encouraged to continue to learn and grow throughout their careers, and are provided with the resources and support they need to do so. This can help to ensure that teachers are well-equipped to provide the best possible education to their students.

Overall, a smart environment in education should be designed to support the professional growth of teachers, as well as to provide students with personalized learning experiences and access to cutting-edge educational resources. By investing in the professional development of educators, we can ensure that our schools and universities are equipped to meet the needs of students in the 21st century.

Conclusion. Based on the analysis of the data obtained as a result of a sociological survey, it can be concluded that the implementation of smart technologies in the teacher's personal educational environment brings positive changes and increases the productivity of the teaching staff. Implementing smart technologies in the teacher's personal educational environment can help to increase productivity, improve communication and collaboration, and provide new opportunities for professional development and learning. It can also help to create more engaging and personalized learning experiences for students, ultimately leading to improved student learning outcomes.

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ПРОБЛЕМЫ РАЗРАБОТКИ ТЕОРЕТИЧЕСКОЙ РАМКИ ИНСТРУМЕНТА ОЦЕНКИ ФУНКЦИОНАЛЬНОЙ ГРАМОТНОСТИ ВЫПУСКНИКОВ ВУЗОВ

Аннотация

В статье рассматриваются исследования, проведенные на рынке труда, указывающие на то, что функциональная грамотность является важным компонентом и отчасти залогом трудоустройства, но помимо этого с точки зрения работодателей существует множество других важных навыков, которые также можно уложить в определение «функциональной грамотности» в ее более широком понимании. Несмотря на заинтересованность Казахстана в оценке ситуации с функциональной грамотностью детей и взрослых, что подтверждается активным участием страны в международных сопоставительных исследованиях, инструментов оценки функциональной грамотности на уровне высшего образования на сегодняшний момент не существует. Критика качества высшего образования в стране также повышает актуальность данного исследования, поскольку оно предлагает вузам теоретическую рамку оценивания развития функциональной грамотности студентов как механизма отслеживания прогресса студентов в этой области и принятия соответствующих мер. При разработке теоретической рамки инструмента оценки функциональной грамотности выпускников вузов в Казахстане важно понимание теоретических, концептуальных и исторических истоков исследований, посвященных измерению функциональной грамотности.

Целью исследования является изучение исторической, методической литературы, а также технической документации для определения общей концепции теоретической рамки инструмента оценки функциональной грамотности выпускников вузов в Казахстане.

В *методологии* исследования использованы контекстный, концептуальный методы интеллектуального анализа текста и методы измерения когнитивных навыков.

Научной новизной исследования является попытка разработки теоретической рамки инструмента оценки функциональной грамотности выпускников вузов в Казахстане.

Практическая значимость определяется тем, что в контексте нового подхода к оценки функциональной грамотности, исследование позволит определить основные тематические направления в области развития функциональной грамотности в высшем образовании.

Исходя из результатов, можно сделать *выводы* о том, что эта статья направлена на использование полученных в ходе данного исследования положений в целях разработки теоретической рамки инструмента оценки функциональной грамотности выпускников вузов в Казахстане.

Рекомендациями служат выводы исследователей о том, важными и принципиальными отличиями предлагаемой рамки является включение компонента ИКТ в задачи, связанные с измерением навыков чтения и счета.

Ключевые слова: теоретическая рамка, функциональная грамотность, читательская грамотность, выпускники вузов, международные исследования.