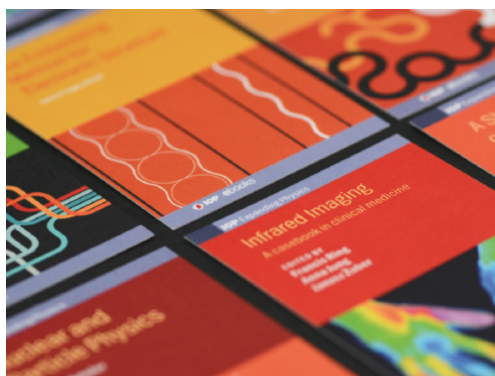


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The application of distance technology in student education

Sergey Yekimov, Agnessa Tomashevskaya, Olena Popova, Sergiy Tkachov, Nataliia Tkachova and Olena Grechanyk

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Alena N Barun, Natallia V Dauhiala, Dzmitry A Dauhiala and Uladzimir U Dziatlau

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Entropy-probabilistic modeling as a tool for forming key competencies of a doctor

A N Tyrsin, D A Yashin and A A Surina

Distance education based on smart-technology

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Abstract. This article explores a number of problems of implementing Smart-education for training of students of correspondence department. Its effectiveness for the system of modern higher education is shown. A number of problems of introducing Smart-education for teaching extramural students have been investigated. Its effectiveness for the modern education system is shown. However, the use of Smart-technologies in itself does not allow raising the level of education; it can only be used as a lever that will simplify and speed up the process of communication between the participants in the learning process. E-learning does not allow, in general, to solve the problem of adapting the educational process to the requirements that employers impose on graduates of higher educational institutions, but at the same time it allows the training to be optimized and brought to a higher level. Smart-technologies, in our opinion, are a promising modern technology that penetrates deeply into various types of human activity, and into education. The main distinguishing feature of smart technologies is the ability to quickly adapt quickly to changes in the external environment.

1. Introduction

The use of Smart-technologies every year is widely used in educational activities. Specific features of Smart-education is the ability to quickly adapt to the level of knowledge and needs of students. This is very important for lifelong learning during the course of a person's labor activity, and in our opinion is very important for the system of modern higher education.

According to researchers such as Germain, Marie-Line. (2019), Salem M., Abdel-Badeeh & Nikitaeva, Anastasia. (2019), Smart-education allows you to study at a convenient time for the student and anywhere. This is achieved through the use of systems using artificial intelligence, which allows us to adapt the educational process to the abilities and educational needs of each student.

As to the findings of Uskov, Vladimir & Howlett, Robert & Jain, Lakhmi. (2020), Uskov, Vladimir & Howlett, Robert & Jain, Lakhmi. (2016), Versteijlen, Marieke & Salgado, Paquita & Janssen Groesbeek, Marleen. (2016), Smart-education makes it possible to quickly adapt the educational process to various environmental changes, is an important element of modern development.

Informed opinion Al-Majeed, Salah & Mirtskhulava, Lela & Al-Zubaidy, Sarim. (2014), indicates that the concept of Smart-education is based on modern achievements in communication and



information technologies, which make it possible to achieve significant social and informational achievements in educational activities.

In the research topic, Heo, Heeok & Lee, Hyeon Woo & Kang, Euisung & Kim, Hyeonjin & Lim, Kyu Yon. (2014), indicate that the need for smart education is due to the following:

- The need of society for better educational services.
- Technical progress, allowing to use new technological solutions in the telecommunications and information space in training.
- The growing informatization of society and its impact on the course of economic processes.
- The need for specialist training, taking into account the requirements of employers.

According to the findings of Hong, You-Sik. (2013), Matros, Dmitry. (1997), in Smart-education, three main methods can be distinguished:

- The methodology, which focuses on the supply of educational material and acquired competencies.
- Technological methodology, focusing on information technology.
- Organizational methodology, the main objective of which is the general organization of the educational process.

Based on the conclusions made by Utami, Sri & Handayani, Sri & Winarni, Inggit & Zuhairi, Fawzi. (2020), Smart education is constantly in the process of evolutionary development. For example, this applies to the use of social networks in the educational process.

The modern computer technology makes it possible to personalize user data. This happens regardless of its location and the platform used, a variety of cross-platform technologies for data synchronization on different devices are actively developed.

According to researchers Hu, Zhifeng. (2018), Wadhvani, Khushboo. (2019), with the specific features of Smart education, which differ from E-learning and traditional education, is as follows. In traditional education, the use of multimedia content is usually limited, and the basis of education is lectures, trainings, laboratory and seminars.

Smart-technologies are designed on the one hand to achieve a virtual effect of presence, and on the other hand, they can increase the speed of content exchange and significantly simplify communication between different participants in the learning process, while there is no need to expect an in-person meeting for communication interaction and collaboration on content.

Smart-education, unlike E-learning, allows you to achieve the effect of virtual presence.

Kuppusamy, Palanivel came to a scientific conclusion. (2020), Mak, Wai Keong & Keong, (2020) that Smart-education is an educational environment that, through the use of Internet technologies in interaction with the environment, allows students to achieve the required competencies, skills, knowledge and abilities. It makes it possible through the application of information technology to satisfy educational needs.

2. Methods

When performing this scientific research, the analytical method was used, which in turn allowed us to study a number of issues considered in this article in their development and unity.

Given the goals and objectives of this study, a functional research method was used, which allowed us to study a number of issues related to the use of distance education using Smart technologies.

3. Results

Modern innovative methods in education are designed to eliminate the contradictions that occur due to the consumers of educational services and their providers

In our opinion, E-learning cannot fully solve the problem of adapting the educational process to modern requirements for graduates of educational institutions. But at the same time, the developments in the field of electronic education can be used in Smart-education.

In the framework of this scientific work, we studied the possibility of using Smart-education mechanisms in the training of correspondence students of the philological faculty of the Dnieper State Technical University (Kamenskoye-city, Ukraine).

Prior to this study, distance learning methods were used in preparing students, but they were not of a systemic nature and did not bring much success.

At the beginning of the study, we formulated the principles that, in our opinion, should be guided by the development of elements of Smart-education for the training of students of the university mentioned above.

1) In our system of Smart-education, in our opinion, one should strive to use relevant information for the formulation of educational tasks. Given the fact that the volume and speed of the incoming information flow is constantly increasing for students, it is necessary to develop training tasks as close as possible to implementation in real practice.

2) In the preparation of training tasks, in our opinion, it is necessary, first of all, to focus on the development of tasks aimed at creatively solving professional problems, independent research activities

3) We believe that the educational environment should go beyond the framework of the university program and contain the elements of training in the context of real practical professional activity.

4) The professional environment should not only act as a customer for the training of specialists, but also, if possible, actively participate in this. Trainees should be able to solve practical tasks under the supervision and with the participation of professionals.

5) Educational vectors should be as flexible as possible and oriented towards meeting individual educational needs and capabilities of each individual student.

Regarding the organizational aspect of Smart-education, we proposed to pay attention to the fact that the use of technologies in itself does not yet make it possible to raise education to a new educational level, but can only serve as a tool that helps to simplify and accelerate communication between educational subjects process.

The education system, in our opinion, should include the following components: educational requirements and standards, curricula for students at various levels of preparedness, approved rules for the organization of the educational process. And all these components must be closely correlated

The contents of educational content, in our opinion, should be periodically updated with relevant information taken from professional blogs and sites. The mechanism for managing academic knowledge should be as flexible as possible, this flexibility can be achieved through the development of the formation of educational content by teachers independently.

Within the framework of the system of personal competencies, in our opinion, the leading role should be assigned to the general cognitive competence of students.

The skills of mechanical memorization, which was very popular in the old days, is currently losing its significance. In the modern information world, it is possible to access various information in a short period of time. With the development of information technology, it became possible to solve various routine operations by mechanizing them. In this connection, we believe that for trainees it is first of all necessary to instill cognitive skills that are not of a mechanical nature.

Обучаемый, на наш взгляд, должен уметь структурно оценить сложность проблемы, уметь видеть различные альтернативные варианты ее решения.

The student, in our opinion, should be able to structurally assess the complexity of the problem, be able to see various alternative solutions.

The presence of the uncertainty factor in the modern world requires the modern person to have competence in orienting within the framework of constantly changing social and technological conditions and his presence.

Based on the results of this study, we developed and implemented the educational environment of Smart-education, which has the following characteristics:

- The ability to learn in a virtual environment.
- The presence of an individual learning environment, depending on the capabilities and abilities of a particular student.
- The possibility of combining with classroom students.
- The ability to learn anywhere and at any time convenient for the student.

To implement our project, we proposed to provide all students and trainees with free access to the appropriate technical infrastructure:

- The presentation equipment.
- The local information network, including using mobile devices.
- To the database with educational information.

To identify persons with access to educational resources, we recommended the use of a person identification system. In each personal account of a student or teacher participating in this project, we posted a schedule of training sessions, information about current performance, individual and group consultations, a schedule for individual assignments, access to electronic library resources and training forums, provided for the possibility of posting our content and the ability to communicate between students and teachers using video chats.

Based on the results of the study, we conducted a survey of students and teachers who took part in our project.

The survey results showed that due to the introduction of Smart-education in the preparation of students of the correspondence department of the philological faculty of the Dnieper State Technical University (Kamenskoye-city, Ukraine), their academic performance improved by 14 per cent.

4. Discussion

The Smart-technologies are a promising modern technology that penetrates into various spheres of human activity, including education. An important distinguishing feature of these technologies is their inherent ability to quickly adapt to a changing external environment.

The dynamically developing information technologies lead to the continuous emergence of new environmental factors. Which in turn makes smart technologies especially in demand in the management of various systems and processes, including educational ones. The need to use Smart-education is due to the dynamics of the development of educational among and transformational changes in human activity.

Currently, there is a gap between the capabilities of Smart-education in the educational process and the willingness of teachers to use it. Smart-education, in our opinion, can be considered as the evolutionary development of E-learning, as a result of the emergence of new information technologies

The introduction of Smart-education in the learning process requires the use of an integrated creative approach, consisting of an organizational, pedagogical and technological component.

5. Conclusions

Smart-education is gradually gaining popularity around the world.

Smart-technologies are able to provide wide access for educational materials in electronic form and allows students to independently acquire professional competencies, and the learning process of students becomes more personalized.

This helps to ensure the maximum level of education and meets the capabilities and requirements of the modern world and allows students to effectively adapt to changes in the external environment.

The main advantages of smart education are:

- Access to training information regardless of place and time.

- The autonomy of the student and teacher.
- A flexible education system, taking into account the capabilities and needs of students.
- The effectiveness of the educational process is determined by the ability to use the acquired knowledge and skills in practice.

In terms of infrastructure, Smart-education uses data centers, interactive whiteboards, tablets, smartphones and other computer equipment.

In our opinion, the introduction of Smart-technologies into the educational process makes it possible not only to improve the training of students studying in absentia, but can also be very useful for full-time students.

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