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REVIEW OF FOREIGN EXPERIENCES ON CREATING A DIGITAL LEARNING ENVIRONMENT IN THE EDUCATIONAL SYSTEM

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ABSTRACT

Today in the economically leading countries of the world, a lot of practical experience has been accumulated in creating a digital educational environment in the higher education system. While the creation of a digital learning environment in higher education is more general, it is also becoming more specific in national societies. This feature is noticeable in the creation of educational servers, platforms and teaching materials. The article describes the experience of creating a digital educational environment in the higher education system of economically leading countries.

KEYWORDS

education, system, digital education, environment, digital learning environment, foreign countries, experience, foreign experience, description.

INTRODUCTION

Currently, Finland, South Korea and Singapore are leading countries in ownership of digital educational technologies. In these countries, for more than twenty years, comprehensive results have been achieved in

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the field. In particular, the quality of education in Finland records high results in terms of parameters that measure it. It is as a result of the use of digital educational technologies that the level of competence of learners is objectively assessed during the academic year without the participation of subjects using various methods and methods. The result of this assessment serves as a foundation for the next stage of education. Therefore, final certification is not organized in the country.

THE MAIN RESULTS AND FINDINGS

One of the unique aspects of Finnish education is the reality-based interdisciplinary connection. If in most countries the main attention is paid to teaching natural (biology, chemistry, physics), social (history, art) sciences, then in this country the study of educational programs such as "Human body", "Environment", "European Union", "Programming" is of priority. earns. "Programming" as an educational subject combines technology and mathematics, and this subject is taught from the 1st grade of general secondary schools. The main focus is on applying the acquired knowledge in practice. In this process, hacking marathons and exhibitions of technological devices created by students are organized.

The country not only implemented distance education, including higher education programs, but also served as the basis for the establishment of the Finnish Online University of Applied Sciences (FOUAS), or in other words, the CampusOnline platform, which serves this purpose.

This platform provides online courses to learners. All online courses are first comprehensively, impartially studied by expert groups, evaluated based on analytical results. Students with the right to use the Campus Arena (2015) platform organize educational activities aimed at step-by-step implementation of their individual curriculum (opetuspolku) into educational practice. The teacher is responsible for the formation of the content of the online course and the selection of topics. At the same time, the pedagogue chooses effective methods and methods of organizing communicative relations with students in this process.

The following computer programs and applications are used to work on the digital education platform: Zoom, SkypeforBusiness, Microsoft Teams, AdobeConnect, WhatsApp (mainly Zoom and AdobeConnect for large groups, SkypeforBusiness, WhatsApp for small groups). The selection of computer programs and applications for the educational process is selected according to the purpose of the educational activity and the number of participants.

South Korea is the next country where digital technologies are a priority in educational practice. The fact that the country has achieved this result can be seen from the PISA (Programme for International

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Student Assessment) research results. According to him, the students of the country occupy the top three in terms of educational results.

In 1999, the Korean Educational Research and Information Service (KERIS) corporation was established in the field of education in South Korea. The corporation aims to methodologically and technologically support training of competitive personnel in educational institutions, in particular, HEIs. Mutual integration of education and digital technologies in the country is ensured within the scope of the activities of the Ministry of Digitization.

The main areas of activity of KERIS are conducting scientific research in the field of education and information technologies, organizing electronic training courses at all stages of continuous education, storing the main data entered in the educational system, creating the hosting of the national educational platform [7].

In 2011, in cooperation with the Ministry of Education of the Republic of Korea and the Presidential Council on Information Processes, "The way to use the power of talented people. SMART (Smart) education" ("A Road to the Power of Talented Individuals. SMART Education") or "Smart education" ("SMART education") project was launched. The project is, firstly, to renew the teaching environment, which allows students to actively participate in debates and project activities, to organize a dialogue process based on the mutual equality of pedagogues and students, and secondly, to receive voluntary education by people of all age groups of the population, as well as It aims to increase the possibility of students to fill up classes when they miss them [3].

In 2017, the Republic of South Korea organized a conference on information and communication technologies in the world for the effective use of information and communication technologies in society and their application in various fields. It ranked second in the ICT Development Index [1, 43; 4, 142].

Today, more than 80 percent of HEIs in South Korea are based on the E-learning system. In addition, the country operates the OTM Smart-system (Open Education System). Currently, there are 22 "cyber-universities" in South Korea, where the educational process is carried out on an electronic system at the state level.

In Singapore, the introduction of digital technologies into teaching practice is carried out in 1997 on the basis of the government policy, which was developed "Digital First Master Plan". Then, step by step, the second and third master plans were developed. The 1st plan for the implementation of digital education technologies is aimed at creating a foundation, the 2nd plan is at creating innovative ideas, the 3rd plan is at creating mutual coaching, and the 4th plan is aimed at

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popularizing existing experiences in the field of digital education and forming digital citizenship.

Since 2015, Singaporean education has been paying special attention to the development of students' creative abilities, according to which the pedagogues themselves must have the competence to create new designs in the educational environment, to conduct classes with the help of modern technologies. Since 2017, a start-up program aimed at the development of digital literacy has been in effect in preschool educational institutions of the country. As part of the program, the Jules company has developed a program of digital literacy courses for preschool children, which serves to develop algorithmic thinking and high-level calculation skills. In the development of high-level computing skills, children are involved in tasks such as programming activities performed by programmers. The teaching process is carried out using tablets based on the behavior of virtual characters. Children learn digital literacy through videos and computer games. Due to the fact that a person is taught to communicate with digital technologies from early childhood, according to the research results of the PISA (Program for International Student Assessment - TMBXD) program, in 2015, Singapore was able to take the 1st place in 2015, and in 2018, together with China, it took the 1st place. was [7].

Six years ago (in 2016), on the initiative of the Prime Minister of Singapore, Lee Hsien Loong, the project "Smart nation" was promoted in the country. The goal of the project was to create a legal, economic and moral foundation for the beginning of the digital era in the country. For this purpose, in 2017 in Singapore to support the creation of technology start-ups and the private IT sector. dollars were allocated. As a result, through tens of thousands of receiving and transmitting devices (sensors), the information related to them was collected in the "Smart Nation Sensor Platform (SNSP)" in order to create convenience for the country's residents and form social infrastructure. "Smart nation and digital government" ("Smart nation and digital government" ("SNDGO"), which operates under the Office of the Prime Minister of the country, as well as the State Technological Agency (GovTech) that transactions (contracts) between citizens and banking institutions are carried out through the SingPass system provider is leading the development of the National Digital Identification System [5].

In Singapore, the Big Fast Results (BFR) Institute is helping to ensure the success of the digitization process in the education system. The activity of the institute in the relevant direction consists of eight stages, which includes the following:

Step 1: Set a firm goal. It is necessary for the management of higher education institutions to be able to set a firm goal aimed at creating a new concept, using technologies, changing the mental

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characteristics of pedagogues and students, and forming a new structural structure.

Stage 2. Establishing the activities of groups implementing various projects. It is divided into project groups that perform various laboratory tests and groups that create a collaborative environment.

Stage 3. "Open doors" day. Through such a day, applicants will be introduced to the activity of higher education institution, its main directions, the results achieved by it, and the educational success of students, pedagogues, by organizing an "excursion" to the educational institution.

Step 4. Strategic plans of HEI activity ("Roadmap" of HEI). This map clearly defines the results to be achieved at each stage.

Step 5. Key Performance Indicators (KPI). Monitoring is carried out carefully with the help of basic indicators that ensure efficiency as the basis of stepwise control representing the economic policy of OTM, and reports are prepared in a timely, high-quality, clear and understandable manner.

Step 6. Digital education developed by OTM and its implementation implementation ideas - ensuring the implementation of projects, evaluating the results of activities. According to it, practical actions aimed at effective management of the digital education system, critical study of the activities of pedagogues-employees, development of recommendations for achieving productivity in their activities, and promotion are organized at the Higher Education Institution.

7. Validation (the system for satisfying customer requirements in using the educational services of the HEI) and comparing the satisfaction of customer requirements with the fulfillment of planned tasks. At the same time, the management of the higher education institution not only sets the task of creating a digital educational environment, but also gradually solves the problems that may arise along the way.

Step 8. Presenting a report to the public on the activities of the HEI, the formation of a digital educational environment in it. In this process, the public will be presented with a detailed newsletter on issues of interest to the public regarding the use of the educational service of the Higher Education Institution [8, 10-11].

In Singapore, in the 1990s, on the basis of the modernization of the educational system in schools, the teaching of "Computer Science" was started in educational institutions. At the beginning of the 21st century, special attention was paid to the digitization of the educational system and the set of competencies related to the ability of students to use complex devices (digital literacy index; information literacy; communicative literacy; ability to create digital

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content; digital security, problem-solving skills in a digital environment) [3] was based.

In the World ranking of competitiveness in digital technologies, the country of Singapore took the first place in 2017 and the second place after the USA in 2018 [9, – pp. 197-198]. Today, the Singapore Institute of Management [14, – p. 29] is leading. In the scientific research conducted in the direction of the development of the field, the main attention is focused on the decision of each higher education institution to find its own methods for the effective organization of corporate e-learning, in particular, micro-coaching (an approach that supports the improvement of the effectiveness of online courses) [11, – p. 29].

In Japan, one of the hegemons of the East, the "foundation" of creating a digital educational environment was laid in 1996. In the same year, the Ministry of Education, Culture, Sports, Science and Technology of the country put forward the demand for the use of modern educational technologies in the higher education system, presentation of educational materials in multimedia form.

Cyber University is the first HEI established in Japan. Today, HEIs that belong to the category of "open universities" are popular in the country, in particular, The Open University of Japan. In this university, mixed education - online training and training based on training units organized in the evening and on weekends has been introduced [14, - p. 42]. In 2014, Public Open Online Courses (OOOK), which includes online courses of 13 HEIs, was launched in Japan [12, – p. 72]. Extensive research is being conducted in the country to effectively organize online learning on educational platforms such as Moodle. In particular, in 2020, in order to increase the capabilities of the Moodle platform within the framework of the Kita project, users were offered to use a free voice interface called Mycroft skill for online training sessions organized in this system.

Since 2017, Cyber University Japan has started using the Cloud Campus educational platform, and in 2018, Kansai University has started using Web Class.

Dutch researchers Marieke de Wit (Marieke de Wit) and Herman van Dompseler (Herman van Dompseler) [13] state that although some components in the digital learning environment are freely available to university students and pedagogues, it is appropriate to set copyright for them. . Consequently, their use in other OTMs may be marked as paid. At the same time, in the use of components in OTM, attention is paid to their interchangeability and expansion. Only then will the educational environment be able to adapt to the changes occurring in the field, and it will be easier to implement technological innovations in teaching practice.

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Here, the authors recognize the educational application model as one of the important components of the digital learning environment and cite as an example the HORA (Hoger Onderwijs Referentie Architectuur – OTME – Higher Education Architecture Reference) [10] for higher education. This standard is organized in cooperation with SURF (Silent Uninterrupted Reading for Fun - QAUT Satisfying Automatic Continuous Education; SURF - Cooperative Association of Education and Research Institutions of the Netherlands (Holland)) and helps to have information on the organization and information of HEI in the country and operates a higher education consulting platform for architecture. Provision of digital education services, promotion of exchange of knowledge with implementation of new innovations are considered important directions in SURF's activities.

The HORA benchmark can be used together with a Learning Management System (LMS). The learning management system (Learning Management System - LMS) includes such components as organizing interaction between students and teachers, their cooperation, sending educational tasks and evaluation [13].

Marieke de Wit and Herman van Dompseler list the important components of the structure of the HORA standard. They are: online/offline education organized with the help of digital technologies; online test control; transfer and assessment of online knowledge (on its basis, students' works are checked for plagiarism; the student himself can carry out this process independently); managing and using electronic information about students; electronic study schedule (its correct design allows for a rational distribution of time and resources between students and teachers); internships and funded projects (which help to obtain a degree in the Netherlands); development, management and sharing of electronic learning materials; support the educational process; analysis of the educational process and quality (for this, the formation of a well-founded methodology is required); communication (the main communication between the pedagogue and students consists of sending messages and educational information; however, it is necessary to create such conditions in the digital educational environment that students should have the opportunity to organize free communication with their peers, pedagogues, leaders; the department, faculty and HEI organize this process responsible for making); cooperation (it is important to decide on educational, creative and scientific cooperation between HEIs); multimedia (video representing virtual reality, other multimedia applications are of special importance in the digital educational environment, such products are prepared by pedagogues and students on relevant topics; this component serves to manage many multimedia resources and ensure their functionality); free

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applications (these include the main application, a pedagogue as an addition to the systems, social networks provided to students, software, applications created in cooperation with students of HEI pedagogues and recommended for the teaching process).

The HORA benchmark, a functional model recommended by the ELI (EHI; European Law Institute/European Law Institute) (Marieke de Wit, Herman van Dompseler) covers the following five aspects:

1. LTI (Learning and Teaching and Innovation), which ensures mutual cooperation and integration.

2. Appropriate software, LIS (Learner Information System), which serves to personalize applications (have the right to use them).

3. xAPI (Experience Application Programming Interface), which provides analysis, organization and assessment of educational quality.

4. SAML/VOOT (Security Assertion Markup Language/Virtual Organization Orthogonal Technology) enabling collaboration.

5. OOAPI (Open Educational Application Programming Interface - TIDOI) [13], which serves to access the appropriate educational platform, use programs and applications, as well as create a universal (universal) design.

In the CIS countries, in the last ten years, the problem of creating a digital educational environment has not only been studied theoretically, but extensive practical efforts have been made to ensure the effective implementation of the relevant process. In particular, in various regions and regions of the Russian Federation, during 2018-2020, general secondary schools were established within the framework of the "Education" national project, and "IT-cube" [2] was established on the basis of special secondary educational institutions within the framework of the "Digital Education Environment" project.

The main goal of the organization of such "IT-cubes" is to "assimilate the students with relevant and highly demanded knowledge, skills and competences in the field of information and telecommunication technologies, as well as to ensure the manifestation, support and development of their abilities and talents, and their orientation to the profession. , creating the necessary conditions for them to have mathematical, information literacy, critical and creative thinking.

With the help of "IT-cubes", students can implement practical activities related to digital technologies, additional educational programs in the relevant direction. implementation, modern information technologies, informatics, information security topics, programming pedagogues, organization of various events among students, project activities on the basis of "Growth Point" ("Tochka rosta") centers, as well as

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"Quantorium" technology parks for children and teenagers, Processes such as distance education, Olympiad on digital technologies, auditions, organization of hackathons [2] are covered.

At this point, it is appropriate to clarify the essence of the term "hackathon", which is new in the language usage.

The concept of "Hackathon" is a producer's forum formed using the terms "hacker" ("hacker") + "marathon" ("marathon"), in which software aimed at finding a solution to a certain problem is created by programmers, designers, managers within a specified time period [6].

Studying the experience of the world's leading countries regarding the creation of digital educational technologies in the educational system makes it possible to come to the following conclusion:

1. The strengthening of the global informatization process, the rapid development of information technology, the increase in the possibility of using digital technologies in all areas, the need for the effective use of this type of educational technologies in the educational system, in particular, is forming in HEIs.

2. Has more than half a century of experience in the practice of using computer and information, and later digital educational technologies in the education system of the world countries. Since 2010, the phenomenon of using digital educational technologies in the education system has occurred in most countries.

3. Online education, online open education forms of using digital educational technologies in the education system are becoming more and more popular today. The main reasons for this are related to creating wide opportunities for learners regardless of their age to acquire specialized knowledge, saving time and money, providing the student with the opportunity to choose the most suitable one among the online open courses offered by the Higher Education Institution, and monitoring the results of the students' educational activities online. it is considered to achieve full satisfaction of the need for creating an educational environment.

4. Creating a digital learning environment in HEIs is a multi-factor (objective and subjective effects), multi-component (technical, educational and process management resources) process, so its organization is complicated. Authors who have carried out scientific research on the development of the field (for example, E.N. Babin, S.G. Evsyukov, G.D. Sidorov, E.V. Ustyujanina, Tsiao Lantszyuuy, etc.) create digital educational technologies at higher education institutions for all those who wish to do so. increase access; expand the opportunity to choose methods and methods of presenting educational material to

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students along with pedagogues; expanding the types of innovative forms and equipment of knowledge transfer; to ensure that higher education institutions can achieve socio-economic advantage in the current environment of increasingly strong competition, to develop programs related to advance technical support for students, in which orderliness, time management, ability to work in a team and willingness to cooperate, online education taking into account the cultural values of the country development of methodical materials, organization of pedagogical advice on effective organization of online classes, implementation of quality evaluation system of educational sites from the point of view of content, ease of use, transmission of educational information, and design.

CONCLUSION

Thus, the priority of digital technologies in the international education system opens up new prospects for raising the quality of education to a new level, increasing the competitiveness of trained personnel, and effective development of human capital. In addition, in accordance with not only national, but also universal interests, establishing the transfer of students and pedagogues, organizing the exchange of modern knowledge, forming an electronic database of educational literature, and creating new educational platforms create conditions for the establishment of innovative trends in education. Using the experience of foreign countries in creating a digital learning environment in each independent country serves as a unique compass in defining the field's perspective.

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