

## **OPPORTUNITIES FOR USE OF DIGITAL INNOVATIONS IN EDUCATION**

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### **Abstract**

The paper reflects the results of research on improving the effectiveness of innovative technologies in education, as well as on the possible prospects associated with digitalization. The regulatory and legal support for the development of digital innovations in various sectors of the economy and the educational sphere is analyzed. Based on the experimental work carried out, the experience of introducing digital innovations in education, a number of measures for the successful implementation of educational programs are proposed. The possibilities of using modern software based on existing learning management systems are identified.

**Keywords:** Digitalization, innovation, digital compass, I-DESI.

### **1. INTRODUCTION**

At present, the intensive development of science and technology, there is an increase in the use of innovative digital technologies in all spheres of human activity, including education. The approved regulatory documents "Strategy for the Development of Russian Society in the Russian Federation for 2017-2030" and the "Digital Economy of the Russian Federation" program outline goals aimed at developing the knowledge society. In the knowledge society, for the socio-economic development of the state, the professional development of the individual, it is necessary to highlight the adoption of strategically significant measures for the accumulation, preservation, critical analysis, transformation and further application of verified information.

### **2. DISCUSSION**

Following the need to achieve key indicators of digital leadership in the countries of the European Union, at the initiative of the European Commission, in March 2021, the Digital Compass 2030: the European path to digital technologies was adopted. The goal of the Digital Compass by 2030 is for at least 80% of citizens to have at least basic digital skills. While 84% of people used the internet regularly in 2019, only 56% had only basic digital skills. Among the countries of the European Union, the leaders in digitalization are the Netherlands and Finland, among those lagging behind in the formation of basic digital skills are Bulgaria and Romania.

According to Digital Compass, there should be at least 20 million ICT professionals in the EU by 2030, compared to 8.4 million in 2020 (corresponding to 4.3% of the workforce). Although there has been steady growth since 2013, acceleration is needed to reach the target. As of 2020, Finland - 7.6% - and Sweden - 7.5% - the highest share of ICT specialists in the workforce [5].

Achievement of the objectives of the Digital Compass outlined by the European Commission lies in the following four key indicators [6]:

1. Skills. ICT professionals: 20 million + gender convergence. Basic digital skills cover at least 80% of the population.
2. Secure and sustainable digital infrastructures. Connectivity: gigabit for everyone, 5G everywhere. Semiconductors: doubling the EU's share of world production. Data - Edge & Cloud: 10,000 climate-neutral and highly secure edge nodes.
3. Digital transformation of business. Technology uptake: 75% of companies in the EU use cloud/artificial intelligence/big data. Late users: More than 90% of SMBs have achieved at least a basic level of digital intensity.
4. Digitalization of public services. Essential government services: 100% online. eHealth: 100% of citizens have access to health records. Digital identity: 80% of citizens use digital identity.

The level of development of digital innovations as a condition for the development of the competitiveness of the economy, society as a whole, and the individual in particular, is taken into account on the basis of the I-DESI complex index adopted in European countries. Based on the composite index published since 2014 by the European Commission, the dynamics of five main areas of the digital economy and society are determined. I-DESI covers five main areas: communications, human capital indicators, research and development in the field of Internet technologies, integrative application of digital innovations, provision of digital government services to businesses and individuals. Every year, the DESI index takes into account the actual achievement of key digital areas that require competent decisions to be made to counter various threats [8].

The threat of COVID-19 that has spread around the world has had a negative impact on all sectors of the economy, including educational activities in the education sector. The threat of the coronavirus pandemic has influenced the perception of the digital transformation of society, opening up new opportunities to accelerate the pace of digital innovation in the organization of secondary vocational and higher education. The opportunities for introducing breakthrough educational innovations and digital technologies that have opened up have intensified the use of public and private online services, increased the efficiency of electronic management of educational systems, the formation of digital skills, the creation of a digital educational space, and improved the quality of human capital development [7].

Table 1 considers the indicators of the DESI indicator, which has a three-level structure [5].

Table 1. Structure of DESI

No	Parameter	Subparameter	Indicator
1	Human capital	Internet User Skills	- at least basic digital skills; - possession of digital skills above the basic level; - at least basic software skills.
		Advanced skills and development	- ICT specialists; - women ICT specialists; - enterprises providing ICT training; - ICT graduates.
2	Connection	Use of Fixed Broadband	- total fixed broadband consumption; - reception of fixed broadband access of at least 100 Mbps; - reception of at least 1 Gbps.
		Fixed broadband coverage	- fast broadband coverage (NGA); - very High Capacity Fixed Network (VHCN) coverage.

		Mobile broadband	<ul style="list-style-type: none"> <li>- 4G coverage;</li> <li>- readiness for 5G;</li> <li>- 5G coverage;</li> <li>- mobile broadband access.</li> </ul>
		Broadband prices	<ul style="list-style-type: none"> <li>- price index for broadband access.</li> </ul>
3	Integration of digital technologies	Digital Intensity	<ul style="list-style-type: none"> <li>- SMEs with at least a basic level of digital intensity.</li> </ul>
		Digital technologies for business	<ul style="list-style-type: none"> <li>- electronic exchange of information;</li> <li>- social media;</li> <li>- a large amount of data;</li> <li>- cloud technologies;</li> <li>- artificial intelligence;</li> <li>- ICT for environmental sustainability.</li> </ul>
		Electronic commerce	<ul style="list-style-type: none"> <li>- SMEs selling online;</li> <li>- turnover of e-commerce;</li> <li>- online sales abroad.</li> </ul>
4	Digital public services	E-government	<ul style="list-style-type: none"> <li>- users of "electronic government"</li> <li>- pre-filled forms;</li> <li>- digital public services for citizens;</li> <li>- digital public services for business;</li> <li>- open data.</li> </ul>

### 3. RESULTS

The effectiveness of the organization and management of the process of professional training of students, the realization of the creative potential of the individual determine the need for the fullest use of scientific, technical, pedagogical innovations. The use of innovative technologies for personal and professional development, the introduction of electronic innovations in the educational process of organizations of secondary vocational and higher education are among the priorities, and contribute to improving the quality of student training. Distance learning technologies are of great interest in the implementation and successful realization of professional training programs [1].

Many of the distance learning programs currently being implemented are based on the placement of presentations, text lectures, audio, video materials, test questions and tasks on their platform. For more effective implementation of educational programs using digital innovations, a number of activities are being carried out [2]:

- Conducting an input survey of students to study professional and personal needs;
- Pedagogical consulting for students (development of an individual educational route, assessment of the level of knowledge, skills of students at all stages of mastering educational material, etc.);
- A combination of various e-learning tools. Synchronous means of information and communication support of the educational process: instant messengers - WhasApp, Viber, V Kontakte; video conferencing Zoom, Teams, Google Meet. By means of electronic consultation of asynchronous and mixed action: E-mail consultation, off-line audio, video lectures, etc.)
- Use of appropriate educational and methodological support of online libraries (electronic textbooks: "Urait", "Lan'", "Student Consultant", "IPR books", publishing center "Academy", scientific journals: "Ibis", platforms

"Springer Link" , "Nature").

In modern socio-economic conditions, the introduction of innovative digital technologies initiates the continuous development and improvement of existing knowledge in any field, in addition to the ability to fully realize one's inner creative potential. Digital technologies are technologies developed with the help of computer technology and having their own software [3].

The use of digital technologies in education allows you to expand the boundaries of what is possible, both for the teacher and the student. The 21st century - the "Gadget Age" - contributes to the increased interest of society in digital technologies, and hence in the use of digital resources, which is an incentive for the digitalization of education. The use of digital technologies simultaneously with traditional ones can significantly increase the flexibility and adaptability of education, as well as the motivation of students for the educational process [4].

Modern software based on existing learning management systems (for example, LMS Moodle) provide ample opportunities for:

- Placement of educational content in the form of video, audio, text lecture material, seminars;
- Carrying out current and final control of the level of formed competencies of students (adaptive tests of various levels of complexity, case tasks, etc.);
- Providing remote consulting support when performing complex tasks individually and in groups through Zoom conferences, instant electronic messages in organized chats, etc.);
- Use in self-preparation for lectures, seminars, writing scientific student papers of educational and methodological support located in electronic Russian and foreign library systems).

#### **4. CONCLUSION**

Thus, against the background of emerging threats to the modern educational system, it is necessary to use the possibilities of digital innovations. The use of digital innovative technologies simultaneously with traditional forms and teaching methods can significantly increase the flexibility and adaptability of education, increase the motivation of students for the learning process.

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