

Media space as an element of the digital educational ecosystem

Espacio mediático como elemento del ecosistema educativo digital

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Abstract

In response to the challenge of informatization of social processes, an information space and a digital educational environment emerge and develop in the field of professional education. Purpose of the article: analysis of the digital educational ecosystem of professional educational institutions. Methodology. The study analyzes the electronic elements used in the modern digital educational ecosystem. Competencies identified by cluster analysis of competency models are presented. Findings. The media space as an electronic environment created by technical means of communication is one of the key elements of the digital educational ecosystem, which allows creating innovative conditions for the development of vocational education.

Key Words: internet design, vocational training, higher education institution, project, professional competence, electronic technology.

Resumen

En respuesta al desafío de la informatización de los procesos sociales, surge y se desarrolla un espacio de información y un entorno educativo digital en el campo de la educación profesional. Objeto del artículo fue el análisis del ecosistema educativo digital de las instituciones educativas profesionales. Metodología. El estudio analiza los elementos electrónicos utilizados en el ecosistema educativo digital moderna. Se presentan las competencias identificadas mediante el análisis de grupos de modelos de competencias. En las conclusiones. El espacio mediático como entorno electrónico creado por medios técnicos de comunicación es uno de los elementos clave del ecosistema educativo digital, que permite crear condiciones innovadoras para el desarrollo de la formación profesional.

Palabras clave: espacio mediático, ecosistema educativo digital, institución de educación superior, institución de educación superior digital, entorno digital, tecnologías electrónicas.

1. Introduction

The influence of the media space on professional education is actively increasing. The rapid growth of technology leads to the introduction of various electronic tools and technologies in the learning process. There is a need to change the educational process in response to new requests from the state and society.

Today, a large-scale digital educational ecosystem is being formed, which offers a significant number of tools that take professional education to a new level. Technological progress will soon make it possible to make available electronic platforms, based on which all interested parties can use various educational services, for example, personal portfolios, intellectual assistants and professional development trajectories.

A digital higher education institution is a socio-cultural educational ecosystem (by ecosystem, many authors mean an environment), the learning process which is personalized and based on the needs of students in the process of various interactions between subjects of the educational process using variable adaptive digital content. The educational ecosystem includes innovative products, technologies that ensure personal safety, the implementation of the requirements of Federal state educational standards, personal and professional self-realization in a networked society.

The formation of a digital university (digital educational ecosystem) implies that professional training, including projects from real life, is carried out in fab and hack labs,

as well as in maker spaces. Such spaces allow everyone to engage in independent activities, to produce, as a rule, single products for design activities, for experimental and scientific tasks (Vaganova et al., 2019). Such spaces should be equipped with the appropriate equipment that will enable students to create truly in-demand modern products (Nagovitsyn et al., 2020). The maker space is formed based on the needs of a particular educational institution (Rudenko et al., 2021). One of the main specific features of such a space is the mobility of furniture, the possibility of its easy movement to meet the current task. Walls contain vertical planes for taking notes and planning, grids for lightweight structures (Tsarapkina et al., 2021). The equipment includes various power supplies and tools (Dobudko et al., 2019). All tools should be readily available. Maker Space is a laboratory with equipment and technology from 3D printing to programming, it is a place where individual research events can be held (Vaganova et al., 2020).

Technical equipment in the creation of a digital educational ecosystem plays one of the significant roles and is a kind of foundation in its construction (Aniskin et al., 2020).

High-quality technical equipment contributes to the organization of students' work not only within an educational institution, but also allows them to communicate at high speed at a remote distance and quickly perform numerous tasks (Yarygin et al., 2019b). The media space contributes to the solution of many issues, but in this work we will pay attention to its function, which is responsible for the interaction of students - an organizational and communication component that ensures the openness of interaction (Yarygin et al., 2019a).

The organization of interaction in the digital educational ecosystem is one of the key tasks, since in modern conditions the role of independent work is increasing, where teachers play the role of a consultant of the educational process or a tutor-mentor (Cirdan, 2019). Curation in the digital educational ecosystem is one of the most important competencies of the teacher.

There is a need to analyze the broad functionality of the digital educational ecosystem and the features of its formation in modern higher educational institutions.

2. Theoretical framework

The media space has an active influence on the field of vocational education. As a medium of interaction, the media space is an electronic environment where communities and groups can work at the same time (Braslavska, 2020). The digital education ecosystem (digital higher education institutions) is developing rapidly (Shcerbakova et al., 2019).

The development of the digital educational ecosystem is viewed from different positions, interpreted both as the introduction and implementation of a set of specific electronic

tools and as the use of a large number of information and related technologies (Pichugina et al., 2019).

This means that there is a need for specialists with new competencies, capable of professional activities in modern conditions (Shcherbakova et al., 2019).

In the modern digital economy, students' abilities related to professional self-realization in the Internet space are of great importance (Kidina, 2020). The importance of communicative competence, which has specific features in the online mode and allows you to choose various strategies and methods of effective interaction, is growing; network skills (skills for working with information on the Internet, passing web training, master classes) (Kharytonov et al., 2019); the ability for continuous personal and professional self-development, the implementation of project activities (projects contribute to the formation of students' ability to predict, plan, analyze, synthesize information, develop communication skills, stimulate search activity, initiative) (Bulaeva, et al., 2018) psychological competence that allows for self-control, manage their condition and performance ; network self-identification of a person (the degree of conscious participation in virtual activity) (Zavyalova, 2008); implementation of goal-setting, taking into account possible risks (Efremenko et al., 2020).

Many of the functions that a teacher should implement in a digital educational environment are innovative and today are performed by persons responsible for organizing the technical side of the issue (Demidov et al., 2016a). However, many functions of a modern university teacher are performed personally (Ponachugin et al., 2019). The functions of the teacher in the digital educational environment include: the formation of the value system of the network society (Demidov et al., 2016b); motivation of students to search and process relevant information; navigation in large-scale flows of information; organization and management of educational activities (Shashlo et al., 2018); moderation of social networks; remote consultation of students; coordination of online platforms; work with open educational resources (Klimov et al., 2019); organization of network security; supervising individual learning paths; organization of project activities of students in an electronic environment (Misakov et al., 2019).

The table reflects some of the features of the digital education ecosystem, both internal and external.

Table 1. Signs of the ecosystem.

Internal	External
Diverse educational trajectories	Organization of partnership with families
Different ages of students	Organization of partnerships with employers
Inclusion in the learning management process of various providers (educational platforms, fab and hack labs, clubs and communities, and others), teachers and the students themselves	Organizing partnerships with urban communities

It should be noted that with the growth of electronic educational courses, their content is changing. The digital ecosystem is aimed at the formation of so-called soft skills, flexible competencies - Soft Skills, that is, creativity - solving problems in a non-standard way, emotional intelligence, the ability to work in a team, the ability for constant personal and professional self-improvement, the ability to independently manage changes.

3. Methodology

The study analyzes the electronic elements used in the modern digital educational ecosystem.

Competencies identified by cluster analysis of competence models of 50 leading companies are presented. Companies are presented in the following categories: IT and Consulting; telecom, transport; financial sector, education, consumer goods (FMCG); resource and production; power engineering (Kondakov, et al, 2019).

The study also analyzed business tools that can be used and are used in the vocational education system and are part of the digital educational ecosystem. From the entire volume, the most common ones were identified.

4. Results and discussion

Today, the digital education ecosystem is made up of many elements. Some of the most common are shown in the figure.

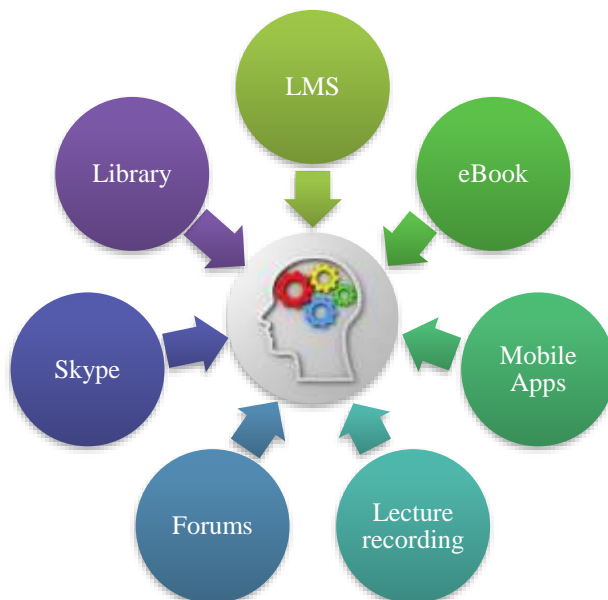


Fig. 1. Components of the digital educational ecosystem of a modern university.

In the modern digital educational ecosystem, electronic platforms (LMS), e-books, mobile applications are of high importance, which, among other things, contribute to the effective organization of operational interaction, for example, Viber, Telegram, WhatsApp and others, forums, electronic libraries, applications for conducting online conferences, applications for recording lecture material. These tools are included in the media space of higher education and allow active interaction of the subjects of the educational process.

The integration of the ecosystem is carried out through the introduction of new forms of education.

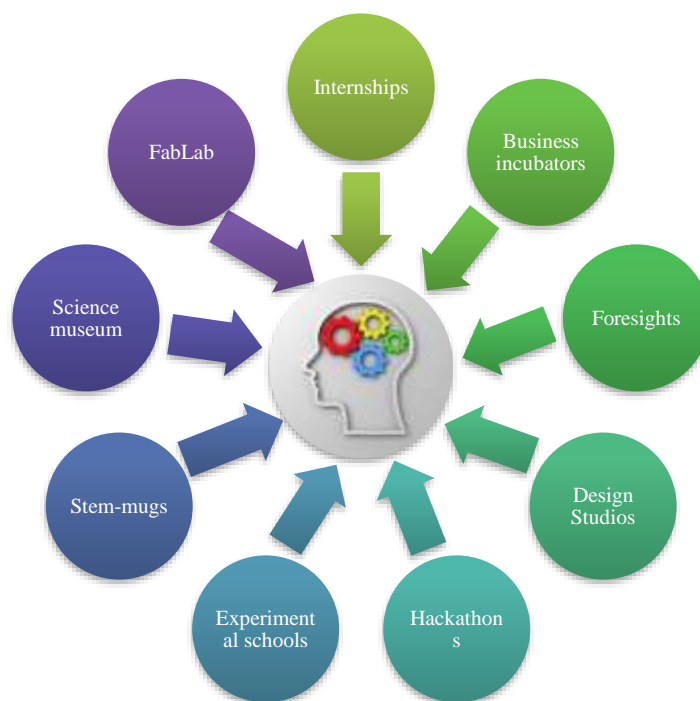


Fig. 2. Innovative forms of education in a digital educational environment

Science museums, design studios, experimental schools all to gain experience in the implementation of innovative technologies with the support of specialists.

Hackathons are an innovative, but already a quite widespread practice-oriented form of education among students. A hackathon company makes its brand recognizable, so students strive for it (Kiseleva et al., 2019). During hackathons, companies independently select students who show the best results. Students receive initial work experience in the company, and the organization itself receives implemented projects that contribute to business development. Foresight is a process in which students create projects for the future. Foresight allows you to assess possible scenarios for the development of a particular field of activity.

Stem-circles (stem-education) presupposes the unification of sciences aimed at the implementation of new technologies, the formation of innovative thinking of students. Its advantages: active teamwork, innovative approaches to project implementation, application of the knowledge gained in practice.

The presented forms allow to immerse the student in conditions close to professional ones, contribute to the acquisition of real experience in the process of independent development of professional solutions to the tasks and problems that arise.

The following figure shows the competencies identified by cluster analysis of competency models of 50 leading companies. Companies are presented in the following categories: IT and Consulting; telecom, transport; financial sector, education, consumer goods (FMCG); resource and production; energy (Kondakov et al., 2019).

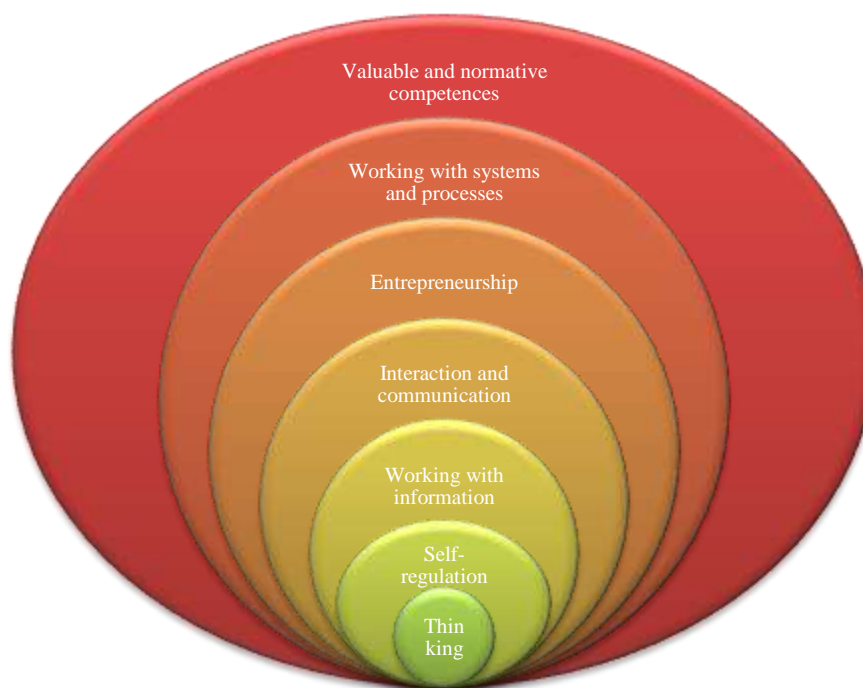


Fig. 3. Results of cluster analysis of competence models (Kondakov et al., 2019)

Data from the All-Russian Scientific and Practical Conference "Digital Didactics of Vocational Education and Training" show that the labor market is in demand for specialists who can actively understand information, work with systems and processes, are capable of self-regulation, interaction with other people, work with novelty and change, communication, work with information, entrepreneurship, and possess value-normative competencies (Kapelyuk et al., 2019). Therefore, professional educational institutions for the training of competitive specialists must respond to the demands of society and the labor market.

These blocks include awareness, the ability to constructive criticism, the ability to collect relevant information, the ability to competent feedback, modeling, teamwork, self-development, constructive criticism, delegation, focus on results, the presence of research behavior, project thinking, the ability to optimize processes, project management, to adequately assess the situation, identify areas of immediate self-development, partnership, leadership, conscious use of resources, and other elements. Electronic tools used by modern business are also relevant in the field of education. The connection of the educational process with real business helps students to master business processes already at the level of training and subsequently quickly become involved in professional activities. The figure shows the key tools of the ecosystem that are used in business and are gradually being introduced into the educational process.



Fig. 4. Business tools in the digital education ecosystem

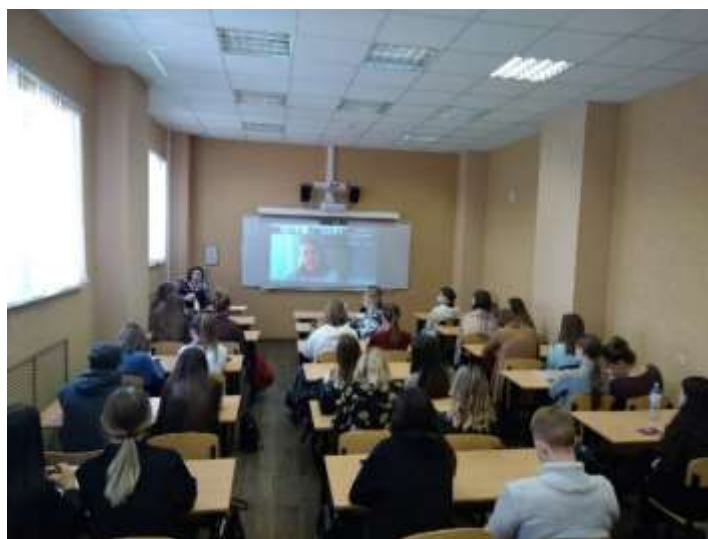


Fig. 5. Online interaction in the context of the development of the digital educational ecosystem.

The digital educational ecosystem allows students to form new competencies that are in demand in the modern world. The ability to apply them now makes it possible to increase the competitiveness of students in the labor market.

5. Conclusions

The digital educational ecosystem is developing rapidly. Today, a modern university widely uses many electronic tools that contribute to bringing professional education to a new level. The expansion of the digital educational ecosystem will allow in the future to create a competitive environment for universities that will improve the conditions and quality of vocational education, attract more investment from employers in the field of education, eliminate the inertia of the educational process (training will be carried out by the projected situation on the labor market at the time of graduation by students of higher school), expand project activities (building the educational process by the needs of employers), create conditions for the formation of an individually trained employee, increase the role of a personal educational portfolio.

The realization of the possibilities of the media space as an electronic environment created by technical means of communication contributes to the development of the digital educational ecosystem.

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