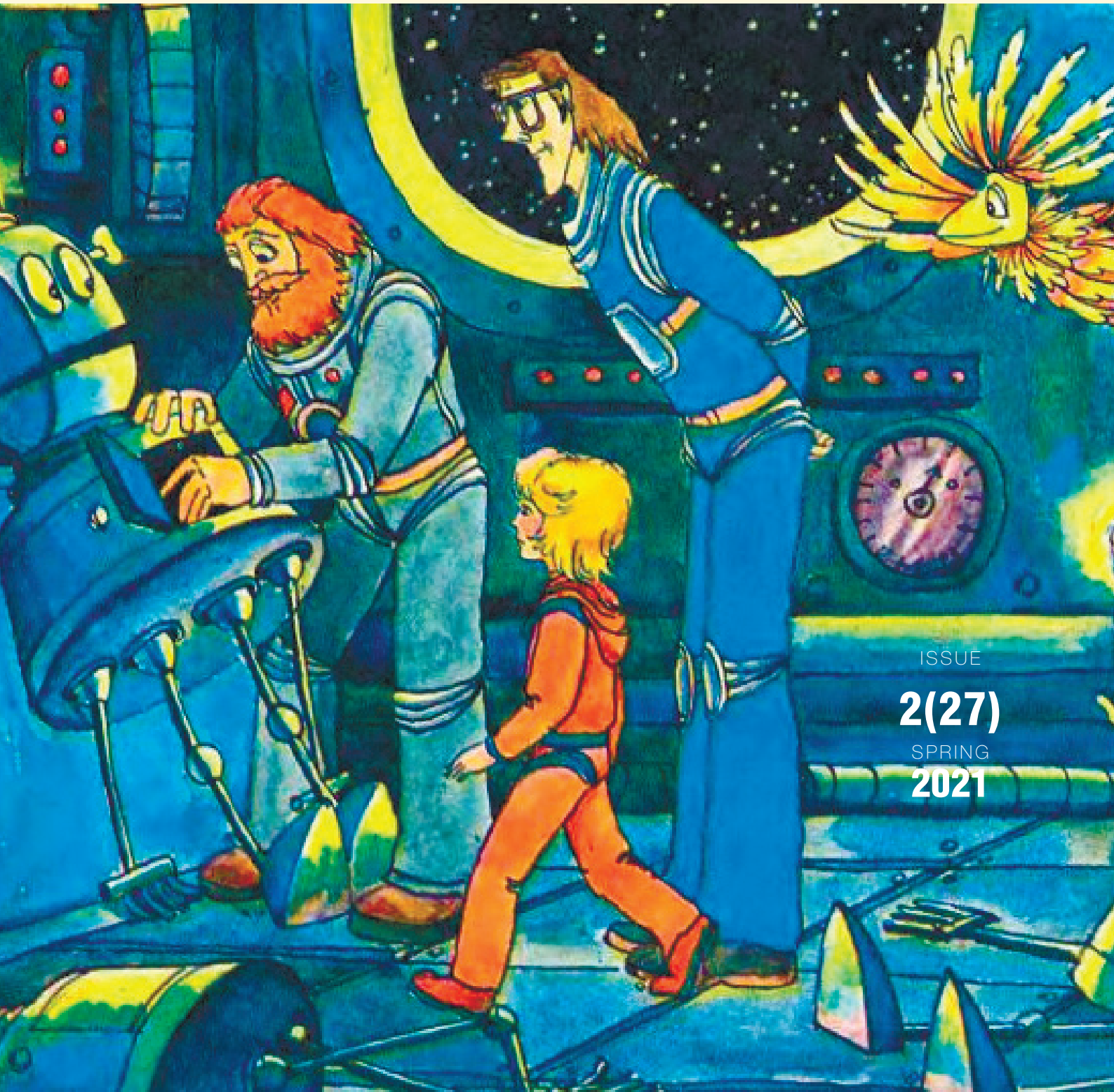


HERB



Higher Education in Russia and Beyond

Digitalization in Higher Education:
Opportunities, Challenges, Perspectives



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Transforming University Learning Environments: Key Processes of Educational Development

The creation of ENU's Digital Ecosystem enhances the digital development of the university, which means the optimization of, and/or a change in, the logic of the university's processes. The ecosystem consists of several smart components dealing with the areas of management, services, learning process, science, information security and IT infrastructure. The goals and objectives are important for the implementation of intelligent control systems based on digital technologies at ENU.

The digital development of the university is impossible without appropriate staffing. In addition to the continuous development of the ICT infrastructure and ensuring information security, it is necessary to constantly develop the digital skills of the academic staff, students and employees of the university.

Table 1. The main effects from the implementation of the Concept of a Digital Ecosystem

Subject	Effects
Government	Reducing expenses at ENU. Reducing corruption risks. Ensuring the transparency of decisions. Increasing digital literacy of the population (training, retraining).
ENU	The development of MOOCs and an increase in the number of students. Reducing wage costs by reducing the number of employees in structural divisions.
Employees of structural divisions	Reducing labor costs and the time for rendering services due to the optimization of business processes and information systems.
Teaching Staff	Reducing labor costs due to the reengineering of existing and the development of new information systems. Advanced training of teaching staff on new digital technologies.
Learners	Reducing unequal access to educational resources. Increased accessibility to quality digital content. Convenience of receiving educational services.

Conclusion

The implementation of the Concept will have a positive impact on the individual, institutional and the national levels. The implementation of the Concept will entail irreversible and sustainable cultural and behavioral changes for teaching staff, students and managers. This will enhance the use

of digital technologies and initiate a sustainable increase in productivity and efficiency. This will enable the university to become a digital education leader as outlined in the University's Strategy 2021–2025. Digital leadership in research, teaching and learning requires the university to focus on data analytics and excellence in research and education delivery. The Concept of the Digital Ecosystem at ENU describes the goals, objectives, principles and opportunities necessary for the university to flourish and adapt to a rapidly changing environment.

- Technology, science and education are now interdependent.
- New technologies create opportunities for transformation.
- Investments in technology deliver measurable results.
- Making management decisions should be based on the analysis of data about the university activities.
- Digital content complements traditional learning, which increases the flexibility of the educational process.

All of these aspects must be taken into account when creating a digital university ecosystem.

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The State of the Digitalization of Higher Education in Uzbekistan: Successes, Problems and Future Tasks

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The measures taken to ensure the continuity of the education during the pandemic

From April 1, 2020, higher education in Uzbekistan turned towards distance learning because of the global COVID-19 pandemic. Uzbekistan, like so many other

countries in the world, was not fully ready for this. However, the rapid digitalization of the education system was carried out, and measures were taken to maintain the quality of education. In particular, the internet speed in higher education institutions, which depends on the number of students, doubled on average. In collaboration with the Ministry for Development of Information Technologies and Communications, in higher education institutions from the 2020–2021 academic year, a preferential tariff was developed to increase the speed of the internet to 1 Gb/s in order to increase the efficiency of distance learning platforms.

Measures are being taken to provide special preferential traffic enabling free access to distance learning platforms and database systems at higher education institutions and the use of other educational resources by all telecommunication operators working in Uzbekistan. Currently, the mobile operator Mobil.uz has introduced a new preferential tariff plan for students and teachers.

During the pandemic, a considerable number of measures have been taken to introduce distance learning in the higher education system. For instance, in order to ensure the continuity of the educational process, to organize the collective use of educational resources, the distance learning website <https://dist.edu.uz> was launched. This integrates the e-learning resources of all higher education institutions onto a single platform.

Requirements for e-learning resources, guidelines for creating resources for distance learning, and routers for students to use distance learning courses were prepared and submitted to universities by the Ministry of Higher and Secondary Special Education.

Webinars are held for officials and professors of higher education institutions about these guidelines and requirements for the implementation of distance learning platforms. In preparation for the 2020–2021 academic year, 6,102 e-learning resources were improved, and 1,098 new e-learning resources were created. 88 state higher educational institutions started the 2020–2021 academic year with distance learning for senior courses (402,165 students). Extra-curricular courses have been introduced at <http://mk.bimm.uz/> to teach professors and teachers the technology of distance learning.

A website <https://tube.edu.uz> has been launched on the TAS-IX network to present video lectures, and now there are more than 400 available. A website for special fiction <https://audiobook.edu.uz>, a part of the TAS-IX network, has also been launched and approximately 100 audiobooks have been posted. The @eduuz_online channel has been launched on the Telegram social network to support distance learning. Webinars have also begun to proliferate. Professors and teachers of higher educational institutions of Uzbekistan have created and shared video lectures through this channel and the students have reaped the fruits of this enterprise. Free access to courses on the open online platform Coursera is provided for university teachers and students.

A number of projects have been carried out to develop and implement information systems:

- an information system for managing higher education as part of a digital university project;
- an online application for admission to master's degree programs, the transfer and reinstatement of students, entrance examinations for secondary education, academic lyceums, vocational schools, colleges and technical schools;
- in 2019/2020, state diploma information for undergraduate and graduate students of higher education institutions was fully digitized through an individual QR-coding system;
- national online science Olympiads among students of higher education institutions have been developed. More than 20,000 students have taken part in the National Online Science Olympiads;
- a database of degrees issued by higher education institutions since 1991 has been formed. More than 1,532,000 degrees were awarded during this period. To date, more than 970,000 degrees have been digitized. This information system was integrated with the information systems of the Ministry of Employment and Labor Relations and the Ministry of Foreign Affairs;
- "Scientific Journals of Uzbekistan" (<https://uzjournals.edu.uz>) was created to promote the work of Uzbek scientists around the world, to bring scientific journals of higher education institutions in line with international standards, to create opportunities for young people to publish scientific articles internationally, and the scientific journals of 41 higher education institutions were reorganized on the basis of the standards of international scientific and technical databases;
- the site iq.edu.uz was put into operation in order to facilitate the spending of students' free time meaningfully and increase their logical thinking. To date, more than 1,000 students have been certified by solving tests on the platform.

Pressing problems in the digitalization of higher education

Despite the work done and the results achieved, there are a number of problems still to be solved in the digitalization of higher education:

- the monthly salary of specialists is below the average market indicators, therefore, there is a need to create favorable conditions and a competitive environment;
- there is insufficient ICT infrastructure in higher education institutions;
- educational information management systems are not available in higher education institutions;
- there is a lack of studios and media centers that produce audiovisual educational content and multimedia educational products (audiobooks, 3D, VR technologies, etc.);

- the competence of teachers in the organization of distance learning does not fully meet the present requirements;
- web metrics on the websites of higher education institutions are below international standards;
- virtual training laboratories in special subjects are not sufficient.

Given the current state of the digitalization of higher education in Uzbekistan, the following proposals are put forward for the development of the sector:

- the implementation of measures to digitize educational process;
- expand the introduction of distance learning;
- develop the skills of teachers and students to create and use electronic information and educational resources;
- the establishment of a system of training for engineers and technicians for the digital economy;
- the improvement of ICT infrastructure at higher education institutions.
- the introduction of the "Digital University" information system in higher education institutions, the creation of electronic teaching materials. Through this system, we can introduce student grade books; digitize group journals, the deans' activities and student portfolios; and automate the management and monitoring of educational and research activities;
- the establishment of studios for the production of educational audiovisual content and educational multimedia products for distance learning;
- the development of a single "Digital Library" for teachers, researchers and students with the integration of digital catalogs of academic literature.
- the individualization of educational processes based on digital technologies, the development of distance learning services, the widespread introduction of webinars, "blended learning", and "flipped classroom" technologies.

Conclusion

Despite the work done to stabilize education during the pandemic, there is much yet to be done. However, we think that the measures taken by the government of Uzbekistan have laid the foundation for what we plan to accomplish in the coming years. The achievements in the past months reflect the will and the determination of the government to meet international educational standards, but this determination can only be fully realized when it is undertaken cooperatively: that is, it is sponsored and promoted by the government, or the organizations that have the resources, and formulated by those who have the abilities to implement it.



Transforming University Learning Environments: Key Processes of Educational Development

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Introduction

Much attention has recently been paid to the development of different learning environments in university contexts. University campus buildings have been transformed to provide open and flexible spaces for varied, collaborative and interactive teaching and learning. The demand for development has been brought about by the call for digital learning environments, by the ideas of community learning and student-centeredness and by the need to improve students' professional skills. The COVID-19 situation is posing further demands for developing hybrid learning environments.

This paper approaches the development of learning environments by first looking at the general conditions based on previous research. It then looks at some pedagogical models that guide this development, and their practical implementations. Finally, some guidelines for future transformation are outlined.

The development of learning environments and operational culture

According to studies on the development of university education, (e.g. Fraser, Gosling, Sorcinelli, 2010 [1]; Hirsto & Löytönen, 2011 [2]), three different models can be distinguished in the enhancement of university education: those focused on the individual, the institution or the whole university sector. When attention is paid primarily to the individual university teacher, the development is often focused on different ways of planning, implementing and evaluating teaching. University pedagogical training at different universities often supports the advancement of an individual teacher in teaching skills and in guiding students' learning.

When the whole institution is the object of development, the primary focus is on the improvement of structures and organizational change, i.e. the implementation of strategic plans and objectives, often also monitoring the performance of students. In this case, the function of teacher development is to primarily serve strategic leadership. However, according to Fraser, Gosling and Sorcinelli [1], the entire university education sector can also be at the heart

About HERB

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Our audience represents a wide international community of scholars and professionals in the field of higher education worldwide. The project is implemented as part of cooperation agreement between the Higher School of Economics and the Boston College Center of International Higher Education.

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