ELEMENTS OF "DIGITAL TECHNOLOGY" IN TEST-BASED KNOWLEDGE ASSESSMENT AT HIGHER EDUCATION INSTITUTIONS OF UZBEKISTAN

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Abstract

The article analyzes the main problems that exist in the field of implementation of digital technology in education, and also considers the scheme of implementing elements of "digital technology" in the system of testing of applicants when submitting documents to the admissions committee of higher education institution. The proposed system includes digital visualization of identity, minimization of test items and test questions, assessment of an applicant's knowledge by a computer program developed, conducting test tests depending on the applicant's contingent by shifts, processing the results by the test center within a week with issuing recommendations.

Keywords: Digital technology, test scores, personality visualization, electronic document, minimization of test items and questions, knowledge assessment, test center.

Introduction. The emergence of the digital economy in the middle of the twentieth century was caused by the accelerated development of the Internet and its active expansion in all areas of state and society without exception. The digital economy is a set of industries associated with the emergence of new technologies and the development of robotics, in which digital platforms, robotics, smart technologies, etc. are used. The digital economy currently already accounts for 5.5% of global GDP for 22.5% of global GDP in various economic and societal spheres. Nowdays, in the time of computerization and high-tech, the digital economy is affecting every aspect of life: healthcare. education, online banking, government. The further introduction of digital technologies and digitalisation products requires wide and free access to the Internet with the simultaneous development of effective legislation. improved skills for Internet users and the creation of new institutions necessary for its stable functioning [1].

Uzbekistan is classified by the World Bank as a Central Asian (CA) country where the digital economy is in its nascent stage. In CA countries, digital policy has focused on the physical and economic accessibility of the Internet. The World Bank (WB) report cites a number of problems specific to Uzbekistan that impede the progressive development of the digital economy:

- I.imited access for the majority of the population to the Internet
- Low digital literacy of the population
- Lack of close interaction between neighbouring CA countries, which contributes to a decline in digitalisation and an increase in the price of Internet use in the region.
- The high dependence of Central Asian states on China and Russia for high-speed internet connectivity.

The development of Uzbekistan's digital economy implies realising the potential of a new economic order to ensure national well-being, with the full participation of the state, the business community and civil society of the country in the implementation of this process [2].

In recent years, more than 25,600 km of fibre-optic communication lines have been laid in Uzbekistan. More than 67% (22.5 million users) of the country's population have access to the World Wide Web, and the number of third- and fourth-generation mobile phone users has exceeded 16 million subscribers. At the same time, the share of expenditure to support the development of information and communication technology (ICT) in the total public expenditure in 2019 was only about 1.5% (USD 7.8 million), which is low for the effective digitalisation of the Republic in both the short and long term.

A similar minimum indicator for development of leading countries (UK. Finland. Denmark, Netherlands, Sweden, USA, France, Norway, Japan) in this area is more than 12% of all public spending. The share of ICT specialists among the employed population was 0.5% in 2019, which is almost 7 times lower than, for example, the EU average (3.7%). The leader in distance education at present is the USA, which together with Canada occupies more than 50% of the e-learning market. The greatest growth is observed in Asian countries: India - 55%, CIR - more than 50%, Malaysia - more than 40%. It should be noted that to date, distance education in Uzbekistan is underdeveloped. Uzbekistan, along with some European and African countries, has launched distance learning for school students. Due to the absence of national Learning Management System (LMS), public and private universities have had to use such programmes as Moodle, e-class Google Classform and conference platforms with students [3].

New technologies are changing education at colleges and universities and are offering online courses which are presenting new methods of learning materials. At schools tablet computers and other technologies are appearing in classrooms [4].

At the same time, the demand for ICT professionals in the country is growing rapidly, so a shortage of ICT human resources can have negative consequences for both the private sector and effective public administration.

Problem statement and solution methods

The most important direction for development of various economies in modern conditions is the transition to a digital economy due to changes in the forms and ways in which various kinds of high-tech services are provided to consumers. The increase in the number of people using the Internet by more than threefold in recent decades has provided them with undeniable benefits, making it easier to communicate, widening the range of sources of information and providing new forms of leisure activities. Education, science, culture and media, as key areas for the introduction of new digital advances, act as critical factors and contribute to the further development of digital technologies. With the introduction of digital technologies in education, the existing methods and technologies for organising the admission of documents, tests and enrolment require the state to increase its expenditure on ICT support and development by introducing supercomputer technology at all stages of

higher education (undergraduate, graduate and doctoral studies) [5,6].

Methods and materials

The admission process of applicants to higher education institutions (HEI) is carried out in accordance with the annual quotas of the State Commission on Admission to Educational Institutions of the Republic of Uzbekistan. The Digital Transformation Strategy of the Republic of Uzbekistan until 2030 states that the digital economy in Uzbekistan infancy, including distance learning. The growing demand for information and communication technology specialists requires a significant change in the traditional system of accepting documents and testing the knowledge of applicants. More than 67% (22.5 million users) have access to the World Wide Web, and the number of third- and fourth-generation mobile phone users has exceeded 16 million.

The digital economy technology in the test preparation center for entrance exams requires the use of supercomputer technology, which provides a large number of high-performance server computers connected to each other by a local high-speed backbone to achieve maximum performance. The Test Centre through supercomputer technology maintains constant connection with the computers of all admission committees of higher education institutions and automatically monitors their activities and receives current information. The use of "paperless technology, in which the main carrier of information is not a paper, and the electronic document formed on a machine carrier of benefit to allow the whole system of admission to universities to approach the production technologies used in foreign countries-leaders of development of "digital economy".

Results and discussions

Based on the above, the system of admission of applicants' documents, tests and enrolment of students is proposed to conduct according the following scheme with the introduction of elements of a digital economy:

I. Regardless of how you submit your documents to the university admissions office (online, applicants in person), it is required on the day of admission:

- visualization of the applicant's identity, with the photo uploaded to a computer and subsequently to an electronic medium
- computer processing of applicant data
- automatic admission of the applicant to the test with the exact day, time, building, auditorium and issuance of an electronic document.

II. Computerization of test rooms (classrooms, lecture and assembly halls) and, if necessary, open spaces, canteens, conference halls, etc., video surveillance in all forms and types will allow conducting test examinations directly at HEI with a minimum number of consultants and observers:

- the admission of applicants to the known classroom shall be carried out by electronic document by computer by personal photo through the checkpoint with a minimum number of observers, advisers. Test questions, one of which is correctly solved in each test subject, shall be shown on the computer.
- it is proposed to minimise the number of test questions to 12 for each subject, with three test subjects
- the knowledge evaluation is given by the computer, if an applicant answers 36 test question correctly, he gets 100 points, if he answers 30, 24, 18, 12 and 6 question, the applicant gets 85, 70 55, 40 and 22 points respectively (provided that the points of subjects are of equal importanc (value)), such scheme of test administration for knowledge evaluation of an applicant excludes further processing of test results and psychological trauma of applicants and parents.
- in fact, a group of 100, 200, 300 or more applicants, depending on the capacity of the premises. may complete the test tests in 1 hour. Depending on the number of applicants admitted to the test examinations in one day, it is possible to complete the test examination of some or all applicants in 3 shifts: 1st shift-8-11 hours, 2nd shift-12-15 hours, 3rd shift - 16-18 hours.
- Where there is a large pool of applicants and insufficient test facilities at the university, it may be possible to conduct the test on several days, changing the test questions for the subjects each time the test results of a given HEI, after further processing in the test centre, allow for the issuing of an order or recommendation for the enrolment of applicants as students within a week. Conflicts. elements of corruption, forgery and other negative qualities are ruled out.

III. This scheme of test-taking in HEI provides for equipping higher education institutions with modern information and communication technology facilities, providing wide and free access to the Internet, computerisation and high technology:

- The admission commission of HEIs together with the State Commission and the Test Centre are invited to consider the admission of applicants with low scores: women (girls) regardless of nationality and place of residence, soldiers who have served real terms in the Armed Forces, sent by the target admission quotas to HEIs of the Republic of Uzbekistan, etc.
- applicants who have graduated from orphanages, shelters, disabled from childhood, from low- income families (especially from single-parent families), children and grandchildren of disabled and participants of the Great Patriotic War. Afghan war, children and grandchildren of participants of the Chernobyl disaster, etc. are recommended for enrolment on State tuition grants or at the expense of businessmen and charity organizations. There should be quotas for these applicants from the State Commission on Admission to HEI of the Republic of Uzbekistan [7,8].

Considering all above mentioned, the training of highly qualified in-demand competitive personnel in all spheres, including in the higher education system with digital economy and digital technologies with wide and free access to the Internet, computerization and high technology requires experimental testing of the above changes in the admission test assessment of applicants' knowledge and enrolment in one of the universities, for example at the “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University [9,10].

Conclusion

This study proposes a change in the substantive organization of the work of admission commissions of higher education institutions with the introduction of elements of digital technologies and digitalization products with wide free access to the Internet and the development of the ICT sphere. Despite the poor development of e-learning (distance learning) and a number of problems characteristic of Uzbekistan that hinder the progressive development of the digital economy, some progress is being made in this area, new technologies are being introduced

in education, online learning is being introduced in colleges and universities, online teachers are presenting new methods of studying educational materials, etc. It is recommended to experimentally test the introduction of "digital technology" elements in the test system of higher education institutions in the Republic of Uzbekistan at the "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University.

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