DIGITALIZATION AND EDUCATION IN THE COVID-19 PANDEMIC: PRACTICES AND INNOVATIONS IN HIGHER EDUCATION SYSTEM IN KAZAKHSTAN

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Abstract. The article analyzes new methods and innovative approaches to the implementation of education in digital format, which are actively being introduced in higher educational institutions. The scientific work is based on the method of theoretical analysis of research of the universities of the Republic of Kazakhstan. New methods and innovative approaches to the implementation of education in digital format have been identified and are being actively implemented by higher educational institutions. In general, this study shows that Kazakh universities are adapting to distance education with certain difficulties. Despite sais difficulties that the pandemic has presented in the field of education, it is important to emphasize the possibilities of distance learning.

Keywords: digitalization; Kazakhstan; COVID-19; innovations; higher education system; university

Introduction

For 30 years of Kazakhstan's Independence, we have experienced more than one global crisis, but Covid pandemy has shocked everyone. And it may be too early to sum up and talk about the consequences of the impact of the pandemic, but it is already clear that education, especially Higher Education will not be the same. The consequences entail enormous social and economic problems and will have a lasting impact on teachers, on children and youth and their parents, as well as on society. And this was felt primarily by the most vulnerable segments of the population. The closure of secondary schools, even temporarily, will increase the gap by 18% between children from poor and rich families[1].
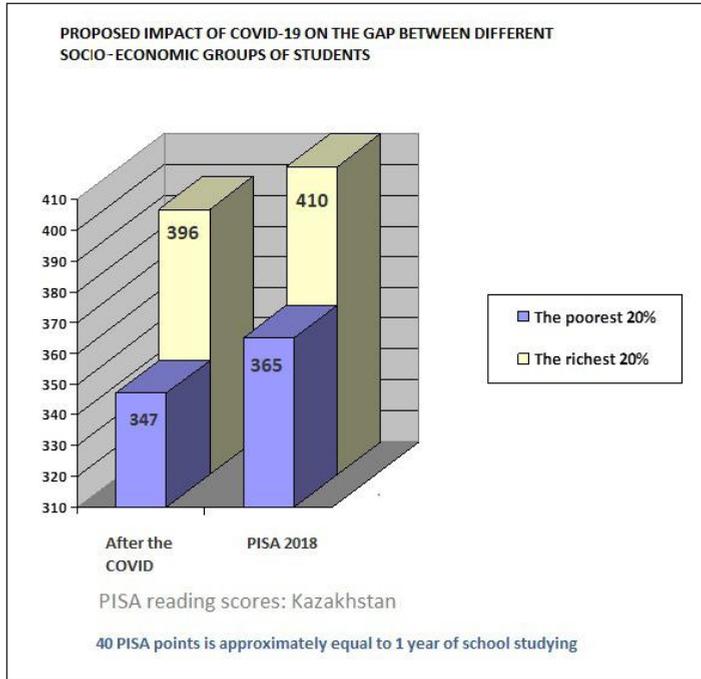
Methods of research

Figure 1. Proposed impact of COVID-19 on the gap between different socio-economic groups of students

According to the results of the PISA study, geographical inequality exacerbates social inequality. The Center for Research and Consulting has identified the presence of "four Kazakhstan's" differing in income, fertility and other components of the Human Capital Index (HCI).

Existing differences:

– the gap between regions with low and high academic performance is 4 years (PISA studies);

– between students of Nazarbayev Intellectual Schools (NIS) and low-achieving students by 124 PISA points, this is almost 3 years of study;

– the level of functional illiteracy of students of Nazarbayev Intellectual Schools (NIS) is 6.2%, and in the country 64%.

On average, 30 – 50% of knowledge was lost compared to a normal year.

Covid pandemic touched all levels of education, including Higher education (Huang et al. 2020).
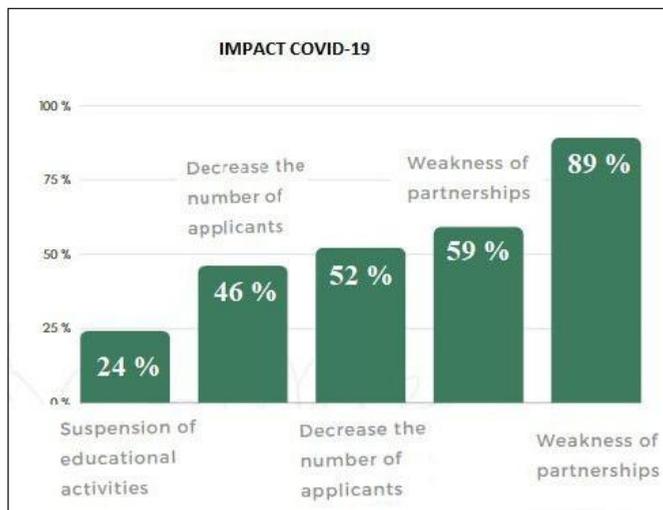
Figure 2. Challenges for universities during a pandemic
(according to a survey by the International Association of Universities)

The first thing universities have faced is the Internationalization of Education. There was a question of organizing the educational process for foreign students who remained in the country during the Covid pandemic. As well as the suspension and search for new methods of recruiting foreign students.
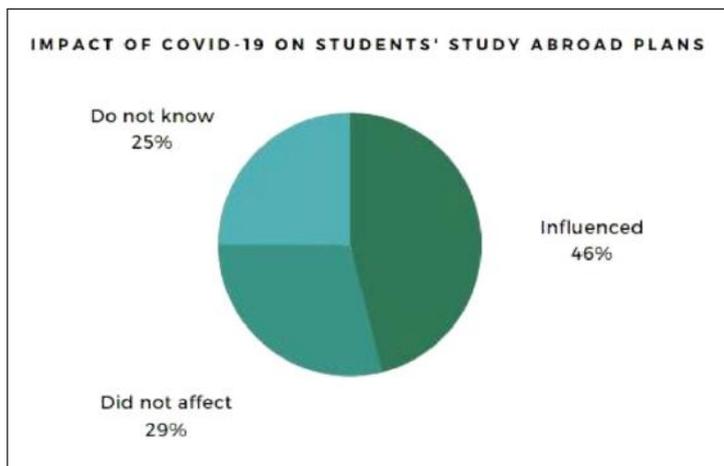

Figure 3. Impact of the pandemic on the plans of international students to study abroad (according to the QS survey 2020)
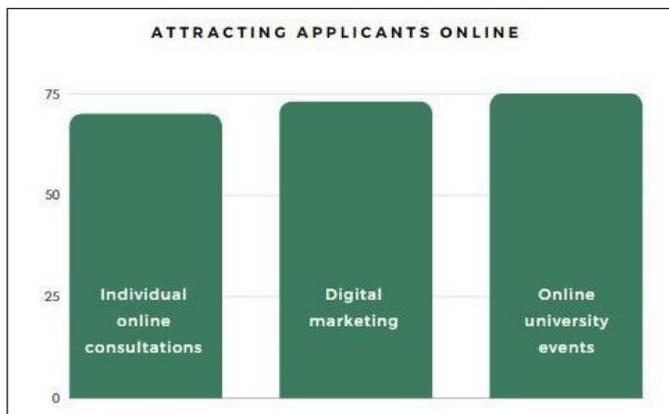
Figure 4. Online formats that are significant for communication with applicants and their engagement online (according to the QS survey 2020)

The first aspect was to attract foreign students, universities organize many online events, exhibitions, and international online platforms for applicants. Universities emphasize the importance of using online formats for communication with applicants (Dieu 2020).

The second aspect is scientific research, higher education institutions are looking for new forms of interaction in online research networks. Third, legal amendments in the legislation are being made to legal and regulatory documents on entrance and certification exams, on the acceptance of documents for admission to the University, on the control and mode of work of the teacher online. The organization of training is another problem that forced universities to rally in search of digital tools, as higher education institutions met the pandemic in varying degrees of readiness[2]. Today, distance and online education formats, as well as various methods for implementing education in a digital format, are being actively implemented by Universities. The pandemic has placed higher education in harsh conditions, forcing them to adapt to new realities. Invest not small financial and human resources for accelerated digitalization, sometimes making ill-informed decisions. The introduction of online technologies to Universities is more expensive than full-time, paying for online education is cheaper than full-time. The pandemic has rolled through the system of the global educational market that has been built for decades.

Digitalization has become a strategic priority for the development of higher education institutions. In order to switch to a new training format, training trainings and webinars were promptly conducted[3]. The state provided support to domestic educational resources. 116 civil universities out of 131 were transferred to the distance learning system. The pandemic has become the starting point for creating the education of the future.

Kazakhstan, of course, did not start its digital development from scratch, in the 90s the State program for Accelerated Industrial and Innovative Development was launched, the Bolashak International Education program was initiated, and the formation of e-government began in 2005. Also, several elements of the innovation ecosystem have already been created in Kazakhstan: the Special economic zone of the PIT "Alatau", "Nazarbayev University" is functioning, the International Technopark Astana Hub is being launched.

The digital economy requires digital skills to use its fruits. At the same time, the current level of computer (digital) literacy of the population is 76.2%, and its growth is necessary in the coming years. Now, the Ministry of Education and Science of the Republic of Kazakhstan is already implementing a number of initiatives:

• Based on three specialties, the subject "Information and Communication Technologies" has been introduced, forming students' basic knowledge of the use of ICT in practice within the chosen profession.

• Events are also planned to update Educational programs based on professional standards and labor market requirements in new areas in demand, such as data analytics, robotics, nanotechnology, as well as to train highly qualified developers in technologies such as artificial intelligence, Internet of things, blockchain, BIM technologies, etc.

To date, the training of ICT specialists for economic sectors in Kazakhstan is conducted in 89 higher educational institutions in 11 specialties and in 318 organizations of technical and vocational education in 5 specialties. "78% of the population have access to the Internet. There are very cheap tariffs for mobile data transmission in Kazakhstan. The country is one of the five countries with the lowest data rates. Most of the schools are connected to the Internet. We are in a country where there are many digital educational platforms" notes Arthur van Diesen, the UNICEF Representative in Kazakhstan. Digitalization of education should lead to optimization and efficiency of educational processes. To do this, today all universities in Kazakhstan have the necessary digital infrastructure and LMS platforms – Platonus, Univer, Moodle, Canvas, etc. Universities provide access to electronic libraries, an online registrar, an online dean's office, a virtual classroom. Laboratories have been set up, all control examinations are conducted remotely, under supervision. There is active cooperation with leading foreign universities in the development of distance learning programs and the development of virtual academic mobility of students.

The transition to a digital university is carried out not only based on technology transfer and education[4]. Digital transformation of education and business should be carried out considering the following 5 impacts on higher education:

– The impact of Big Data on educational methods and business.
– The impact of MOOCs and online services.
– The impact of Adaptive Learning and Big Data.
– Ecosystem of science and business collaboration.
– Mixed university education and corporate training.

Perhaps the most effective digital tool is the Learning & Academic Analytics tool (LAAT) for the comprehensive collection and statistical evaluation of teaching and learning data. This tool also provides an intellectual relationship between the teaching of higher education and the management[5]. Comprehensive predictive data analysis through a "digit" can provide immediate clues to students about their level of knowledge and ensure rapid course adjustments. For example, if most students have difficulties with a subject or if individual students risk not completing the course, it is possible to receive push notifications based on the results of digital analytics. This digital tool can simultaneously serve as feedback for teachers and, possibly, complement mainly subjective assessments of teaching[6].

The digital ecosystem of L. N. Gumilyov Eurasian National University is implemented based on the conceptual model of the digital university 4.0. (according to the model of G. Sidorov/PWC) in the following areas:

– Creation of a digital educational platform and digital communication;

– Digitalization of resource management based on scientific, technical and methodological support of processes;

– Digitalization of research and development management, procurement, interaction of applicants and students;

– Digitalization of the highest complexity with the implementation of augmented and virtual realities, Internet of things, 3D printing, drones at the university.

M. Narikbayev KAZGUU University presented the Smart KAZGUU mobile application, which made life easier for students and parents. "Today, students can manage their balance, make up their schedule, get certificates, documents and even write an application without leaving home. All this can be done using a mobile application. With the help of the "Finance" section, the student can manage his balance. A student or parents can top up and view the current total balance. Also, students can get statements for semesters or for a certain period" said Galymzhan Kudaibergenov, First Deputy Chairman of the Board of KAZGUU. Another advantage of the mobile application is that the student forms his own schedule within the framework of credit training, chooses a teacher, class time and date.

Conclusion

In the modern world, digital technologies penetrate all spheres of human activity and make significant changes in it. The coronavirus pandemic has only accelerated the process of digitalization penetration into all spheres of everyday life. Now being "digital" is not an option, but a real necessity. Our life and education are increasingly digitized and filled with data (Psacharopoulos 2018).

Moreover, it is not yet known whether the coronavirus slows down or stimulates global education. And is total digitalization a boon or a bomb of hidden action?

German researchers Norbert Arnold and Thomas Koehler in the recently published study "Digital Society" note the need to regulate the consequences of the

introduction of artificial intelligence. The fact is that in the conditions of society created by digitalization, the scenarios of abuse of modern technologies become so obvious that their consequences can far exceed those described by George Orwell in his Dystopia "1984", as well as by other authors – Ray Bradbury, Jack London or Yevgeny Zamyatin, who wrote the novel "We" back in 1920[7].

German researchers see the solution to the problem of countering the negative consequences of digitalization in deepening such an area as the protection of personal data from abuse[8]. This is understood as the right to information self-determination, the protection of the right of the individual in the case of its digital processing and, finally, the protection of the personal sphere. In recent years, the number of crimes committed using Information and Telecommunication technologies or in the field of Computer Information has increased to a scale that allows us to talk about them as a threat to national security, especially given their low detection rate, fixed at no more than 25%.

Now the word "cyber" has become rather abusive, or rather scary, when they talk about cyberspace, cyber threats, they mean that terrible hackers will climb out of there. Or here we are digitalizing everything, we will have everything now through a computer. Will it not work out, as with the recent failure in Facebook, everything will just get up because, I do not know what happened there, the system has frozen.

NOTES

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