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# ҚАЗАҚСТАННЫҢ ЖОҒАРЫ МЕКТЕБІ ВЫСШАЯ ШКОЛА КАЗАХСТАНА



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## ПОДГОТОВКА КАДРОВ ИНДУСТРИАЛЬНО- ИННОВАЦИОННОГО РАЗВИТИЯ КАЗАХСТАНА

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ОСОБЕННОСТИ ПОДГОТОВКИ ОТЕЧЕСТВЕННЫХ СПЕЦИАЛИСТОВ

## PROSPECTS OF BIOLOGY STUDENTS TRAINING IN FRAME OF DISTANCE LEARNING TECHNOLOGIES

*«Oh, how many of wonderful discoveries Enlightenment spirit prepares for us»*

A.S. Pushkin

Currently distance education is regarded as a full-fledged alternative to conventional education. Specific attractiveness of distance learning (DL) is explained by the authorities in reference of the possibility to successfully organize and maintain a permanent network of continuous professional development for civil servants.

Distance education first appeared in the XX century the United Kingdom. It has offered a chance to everyone keen to improve one's qualifications, to study «at home» without approaching education centers, to continuously study, if it would be financially affordable. So a 90-year-old student got the possibility to enter the university. Noteworthy, DL is also specific way of involving disabled or troublesome cohorts. This trend has become especially of high demand in the early era related to the development of computer technologies and information systems. Humanitarian specialties revealed an advantage over natural sciences in course of distance education, since practical occupations of natural researchers were not supported at that time with relevant virtual developments.

According to statistics, in a changing complex world the majority of the graduates in a number of universities are being registered though remain not reaching their true occupation. In this regard, the employees representing institutions and companies need to get at first a second higher education without interruption of their work activities; secondly, they require continuous professional growth. Equally important for any institution to support a

certain level of competitiveness. In educational institutions and training centers remote and mixed forms allow to cover distant regions and reduce direct costs of training. All this contributes to the onset and growth of a significant number of consumers of educational services interested in DL[1-3].

However, there is an ambiguous attitude to DL. This kind of education is of utmost demand, as practice shows, in the following areas:

- corporate sphere as a substitute for conventional training courses;
- education by signing up to individual courses;
- financial and IT education and re-training of employees;
- health care with development of skills and re-certification of medical staff.

So, DL can fully complement conventional full-time education. The most expedient may be so-termed hybrid (mixed) training, which includes some courses, depending on their specifics, to be studied in a traditional way, and the part acquired as DL.

During DL, the instructor and trainee are spatially departed, and training is carried out by using modern information and communication technologies (ICT). DL students develop creative, critical thinking skills, keep raising the level of ICT competence through implication of modern technologies in the process of mastering the training course. The student works independently most of the time to promote the skills of self-scheduling, planning, controlling and self-evaluating. This enables the trainee to activate himself, determine



the level of mastering knowledge without assistance, understand existing gaps in one's knowledge and skills.

As mentioned above, global DL distribution reflects the needs of modern civilization in the mass form of education. DL has occupied its place in the educational sphere all over the world involving common population in its network to exhibit the significance of this social phenomenon.

An undoubted fact is the desire of modern society to improve educational attainment, which requires subsequent emphasis on the mass character of education and better qualitative level. This happens due to a significant impact of corporative intellectual labour and growing demands on the consumer and the producer of material and spiritual goods. However, the share of students in Kazakhstan is close to 2.6% of

country's population, while this parameter in major developed countries of the world achieves 3-3.5%, and 5.5% in the USA [3, 4]. In this respect, the widespread introduction of distance education technologies in Kazakhstan may serve for increased level of education among the population.

At the meeting with professors and academicians of Kazakhstan, dedicated to the 70th anniversary of the National Academy of Science of the Republic of Kazakhstan, President N.A. Nazarbayev said: «The basis of our further long route is education and science. Who will win? That one who has a strong education and advanced science in hand. This people will be treated as the elite of our state. Moreover, someones out of this people will run the country forward!». Consequently, as the education of the society boradens, the competitiveness and the welfare of the country will increase.

Currently, the republic is working on expanding academic managerial autonomy in higher educational establishments, which was discussed at the round table of the Committee for Social and Cultural Development of the Lower Chamber (Majilis) of the Parliament of the Republic of Kazakhstan. The government seeks for the solution of this issue by providing wider access of country's population to higher education. With this reference, over the past year 2017, the state educational order has been increased by almost 10,000 seats. The access may be expanded also by growing contingent of distance learners able to handle DL technologies [5].

The importance of implementing distance education is determined by the positive impact on the complex of social and economic problems of different regions (stabilization, eradication of unemployment, reduction of criminality, drug addiction, and etc.) by means of DL education. In addition, there is training of the population in the places of residence, which will naturally lead to the elimination of under-development of the peripheral regions comparing to the capital cities in respect of free access to education, information and cultural achievements.

On January 18-19, 2018, the 48th Scientific and Methodological Conference "The role of higher education institutions in the modernization of public consciousness: transition to «The University 4.0» Model" has been held at al-Farabi Kazakh National University. One of the sections was devoted to the transformation of educational programs towards the personnel training in the digital medium. Among other topics of this section, issues of DL development, organization of lifelong learning have been tackled. Setting

up of such a section confirms the importance and urgency of DL expansion over country's universities.

In 2016, the Faculty of Biology and Biotechnology of al-Farabi KazNU has begun training the students specialized in "5B060700 – Biology" as a second higher education by implementing DL techniques. In accordance with conventional graduation, this is a correspondence form of education or «outside the audience», as the instructor fulfills mainly controlling functions serving as evaluating side. Thematic DL planning and handouts on the courses studied at al-Farabi KazNU are posted on the website via «The Univer» intranet resource (<https://univer.kaznu.kz>) and special «Distance Courses» tab. The content of the course is uploaded using relevant information blocks, or the modules. Correspondence form of distance education involves studying the materials saved in the system «Univer»: presentations on the topics of classes, references, video applications, glossaries, interactive media, links to supplementary web citations.

DL educational process includes all the main forms of conventional teaching: lectures, practical hours (seminars or laboratories), a control system, research and self-works carried out by the students. All these forms of the educational process are provided for the combination of independent work of students with a variety of information sources, and also prompt interaction with the instructor (see Fig. 1).

One of the serious difficulties of DL training in Biology is the conductance of laboratories. In our opinion, this problem may be solved by developing virtual laboratories, related samples and exercises. This may appear to be a huge and promising work, not only for DL but also in general full-time education. Virtual development will enrich, in turn, the library and learning opportunities. For further development of such programs to meet international standards, it is certainly necessary to attract highly qualified instructors and web designers. However, this requires additional expenses to be supplied through DL educational services provided by the universities.

It is currently planned to teach K-12 Biology in English in secondary schools of Kazakhstan [6]. With this regard, the opening of distance education for 5B060700, Biology (Scientific) and 5B011300, Biology (Pedagogical) in English as a second higher and M.Sc. degree for the teachers will definitely improve professional qualifications.

Our experience in distance instructing has made it possible to determine a range of difficulties and shortcomings in current curriculum. For instance, it is difficult to conduct field internship (with departure to the field site) and pedagogical internship. We suggest that it would be reasonable to replace these internships for the internship at the enterprise, since the majority of trainees is employed and thus is not able to leave their work places in the pre-scheduled time of practice. Moreover, we propose to reduce general list of disciplines for each semester from 9 to 6-7 by uniting some of the courses. For example, «Botany, part 1» and «Botany, part 2» may be merged into the course on Botany with single final examination by this discipline.

In our opinion, accomplishment of a thesis for DL students should not be mandatory. Graduates should be give an opportunity to choose final certification either in the form of a final comprehensive examination to be taken by basic

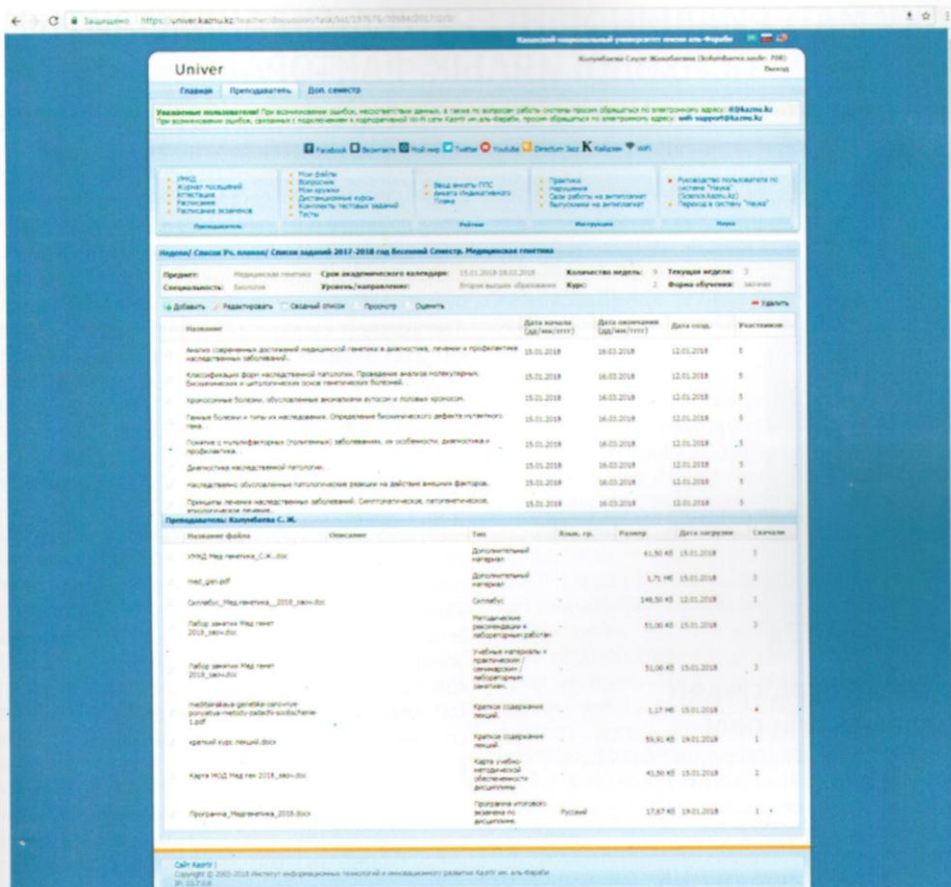


Figure 1 - The example of «The Univer» intranet computational network of al-Farabi KazNU designed for distance learning purposes

disciplines, or the defense of the thesis which may be replaced by state examinations confirming knowledge on specific subjects of the specialty.

At the Faculty of Biology and Biotechnology, for the first

time in 2016 biologists have been instructed by implying distance teaching methods. Last year has shown that this would be an urgent and challenging directory, especially for retraining, life-long education and trialing new educational trends.

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