Using the innovative I-learning platform in the education system

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***Abstract*—Today, due to the rapid development of digital technology, every teacher has the opportunity to competently form their own educational resources. The number of platforms, services, sites, special courses, allowing to offer educational resources is growing in the market. Creation of competitive educational resources and their wide distribution is one of the urgent problems of today. In this article we will analyze open educational resources offered for mass use, identify the most widely used topics and demand for them, and explore directions for development. To this end, search services and open educational resources of the Internet will be available. The results of the study identified two main areas: first, the fact that teachers need proper training and professional development in relation to online learning to successfully meet the requirements for learning in an online environment. The results of this study showed that the main goal of the innovation process is the renewal of education, the optimal use of new technologies, the study of Innovative Learning gave relatively new results. Secondly, to determine the impact of educational resources to improve the quality of learning, it is necessary to introduce a form of assessment of student achievement according to their cognitive level in order to measure learning outcomes. It is also very important for the teacher to use a common assessment form to track progress in the virtual environment. The results confirm the idea of the theory of conceptual self-improvement, for effective organization of innovative learning teachers need appropriate professional development. The results of this study can improve the experience of using the educational environment on the Internet with the help of an innovative platform I-learning.**

Keywords— i-learning, Innovation, innovation process, motivation, paradigm

I. Introduction

In today's dynamically developing world of new competitive technologies, the needs of the individual and society, the prospects for social development directly depend on the state of the education system, its quality in education.

In the mobile world, innovative technologies are gaining more and more general status, as they are indicators of the cultural process of society. To increase competitiveness in the education system, one of the topical issues is the formation of innovative educational platforms for self-education. This issue corresponds to the direction of the formation of the innovation ecosystem.

Innovative education considers the linguo-communicative culture of students and the importance of intrinsic motivation in choosing their professional direction. Methodological bases of development of technology of formation of linguo-communicative culture of schoolchildren are analyzed in the scientific article. The features of adaptation to rapid changes in society by innovation processes through the formation of linguo-communicative culture are analyzed and five different scales of defining this culture (high, good, above average, average, low) under the influence of interaction are demonstrated [1, 2].

It has been proved that intrinsic motivation (social group and personally significant motives) and extrinsic positive motivation influence the readiness of high school students to choose vocational training directions, i.e. to acquire necessary knowledge for future professions.

A statistically significant correlation was found between individual relevance, constructive learning environment uncertainty, learner negotiation variables, and scores for each of the six innovation competence variables. The conducted multiple regression analysis showed that students' negotiations are the only important predictor of their overall innovative competence. It has been proven that when teachers are involved in the development and management of learning, a learning environment is created that supports creativity and innovative thinking of students, without limiting them [3].

Richardson, Carmen, and Punya Mishra's "learning environments that support student creativity: Developing the SCALE identified three main areas in creating learning environments that support student creativity: student engagement, physical environment, and learning climate. These three identified areas form the basis for scaling the learning environment [4].

E-learning is seen as a new and important area of education and has identified an effective method for enhancing student innovation through an e-learning model that integrates the instructional nature of the course through the principle of autocontrol.

The necessity of applying student-centered teaching methods aimed at the development of their innovative thinking competence and implementation of modern classroom technologies is substantiated. The e-learning model effectively stimulates students' interest in reading, develops students' innovative thinking and improves the quality of learning [5].

E-learning provides good opportunities for virtual mobility of students they can study courses at other universities. This requires strategic planning for innovation in e-learning at the institutional and inter-institutional (regional, national) levels. The relationship between strategic planning and inno-

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vation management, the stages of interaction between the national and institutional levels of strategic planning are also discussed [6].

In all fields it was based that the most important asset in creation of innovations is education [7]. Innovation is defined as the most important factor of educational institution viability in the conditions of economic competition. Internationalization of knowledge is considered as one of the methods of increasing human resources and personal innovative potential. The method that encourages the employee to continuous learning is the cycle of learning, i.e. the process of continuous improvement of knowledge. The internalization of knowledge, learning resources on open online platforms available for public use, affects the development of individual innovative abilities.

The breadth, depth and coordination of open innovation is expected to play an important role in the development of institutions as competitive. Institutions achieve more innovation in obtaining, mastering, using, multi-connecting technologies with external sources. Organized learning, the innovation process will be effective if the accumulation and provision of students with the necessary educational resources on one platform [8]. The feasibility and high quality of providing students with mass open learning resources has been revealed, and the effectiveness of individual instructional technology has been determined. Due to insufficient consideration of information about the learning context, the existing methods of providing educational resources cannot effectively solve problems such as loss of navigation and fluctuating learning topics. To address these challenges, this paper presents context-based e-learning resources. Constructing a map of learners' learning context and a model of context correlation "knowledge-resource" combined with personal outcomes technology allows students to obtain learning resources that are aligned with learning goals, knowledge levels, and individual preferences. This strategy helps students understand the knowledge system and the direction of learning, as well as improve learning effectiveness [9].

A model for innovative education was created, controlled indicators of social experiences were identified, and then the connections of their use and implementation in the classroom through a design and learning platform were explored [10].

Several aspects of students' collaborative roles, including behavior in the collective environment, information sharing, accessibility, and sphere of influence, as well as SNA-Social Network Analysis and LA-Learning Analytics methods, which are useful for visualizing relationships with other participants (students and teachers) through visualization [11] are defined.

Two main concepts, innovation, are defined, firstly, as a new, invention and useful solution in a material or non-material space, and secondly, as an end product, process or method depending on the practical needs and goals of people and innovative learning as a problematic one. and the creative process of interactive application and implementation of knowledge and skills. Innovative learning includes design, planning, decision making and the practical process itself [12].

Proposed the process of developing a new model of educational innovation, involving the use of digital technology [13]. Revealed the connection between distributed leadership and collective understanding as the most important condition for the implementation of digital learning materials in learning practices.

Monitoring of the e-learning environment It has been proved that the monitoring of study groups in the network environment can be achieved not only by achieving the learning goals, but also by self-control of the internal motivation of students. The use of a digital e-learning platform has changed traditional learning resources, teaching methods, learning models, learning assessments and learning management, and has accelerated the process of informatization of education of an educational institution [14].

Virtual and online education platforms are becoming a larger and larger industry. The large amount of learning information for students the accessibility of independent learning through online platforms has a positive effect on their engagement during classes. In addition, students' ability to manage learning activities increases. The existing forms of implementation of adaptive learning in higher education systems using online platforms of universities in Kazakhstan and Bulgaria were analyzed. Studies on online learning platforms have shown that they cover both the technical side of the problem and the pedagogical component [15].

The rapid development of innovative technologies affects the widespread use of virtual reality in all spheres of human life, including education. The problems of virtual reality concern the cognitive and practical activities of mankind, the need to explain the nature of virtual reality, to disclose the theological foundations of the development of the world and life, to justify the existence and activity of things in different types of reality is manifested. Designing virtual games contributes to the development of new achievements in the field of graphic and sound capabilities used in the creation of virtual reality systems [16].

Virtual learning is learning represented by a set of information and pedagogical technologies integrated into the process of interaction of subjects and objects as virtual educational resources. This interaction is characterized as a set of dialectically interrelated spheres of human activity (intellectual, emotional-image, cultural, social) [17].

The use of modern information and communication technologies in the educational process (electronic stats, electronic teleconferences, electronic and information resources containing textual, visual, audio and video information) and virtual technologies (Daydream, Vive VR, virtual game technology) allows interactive linking. The interactive interaction in the practice of application of virtual educational environment between students and teachers of universities in Kazakhstan and Slovakia is investigated. The issues of organizing e-learning through the LMS Moodle platform, conducting classes in electronic classes, online courses, and organizing synchronous and asynchronous learning are considered [18].

To create open learning platforms, it is very important to rationally combine their technical and pedagogical complexes with the use of innovative technologies. The purpose of our work is to study the methods of rational coordination for the implementation and organization of an innovative open educational platform I-Learning.

II. INNOVATIVE PROCESSES

In scientific works there are many definitions of the concept of "Innovation". In most cases, innovation is considered

as "novelty effect", achieved by rationalization or optimization of existing technologies and organizational models. But this approach loses the meaning of innovation as a special social paradigm, we define "innovation" as "invention" of something "new" that has commercial effect or public resonance. It seems much more promising to implement innovations not with "substantial innovations", but with "KAS-ki innovations", i.e. with changes "embedded in the flow". The essence of such approach was that Felix Jansen said: "Innovation is not a single event, but a trajectory consisting of many small events".

According to international standard innovation (innovation) is an end result of technological process or creative activity, which is realized in the market as a new or improved product, which is available in practice.

Innovations are considered depending on the object and subject of research:

- result;
- change;
- process.

The logic of the innovation process is subordinated to the idea of updating and optimizing the education system and reflects the way of updating the education system, including the presentation of an idea, the development of a project, the examination of an innovation, its implementation and adjustment, the dissemination and expansion of new experience (Fig. 1).

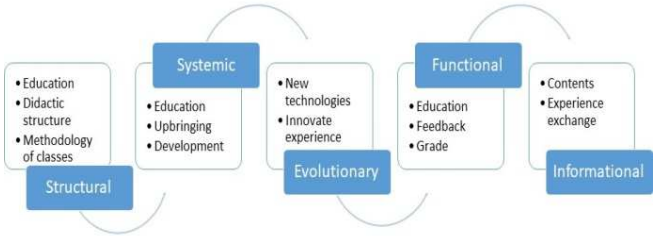


Fig. 1. Patterns of the innovation process in education.

Innovative education is education, which implements modern educational technologies, moves away from the paradigm of education to the formation of skills and competencies of the XXI century, aimed at the formation of the student's personality on the basis of interdisciplinary and interdisciplinary approaches, in a variety of types and forms of his activities. It includes a wide use of digital tools and resources and is the main trend of modern education.

The innovation process in education is very complex and, in its turn, consists of complex stages covering several processes. We propose to create an organizational and informational innovative environment that stimulates innovative thinking, that is, "pushing" a person beyond his professional and social experience.

The simplest version of such an environment can be represented as an "innovation chain", referring to the composition of several interrelated stages or innovation process:

1) paradigm" is a set of fundamental views, ideas, notions and images, which predetermine the strategy of actions in a certain field;

2) idea-a certain paradigmatic solution

3) project-a model of practical realization of an innovative idea;

4) carrying out an experimental-innovative project;

5) implementation-a broad promotion of a tested innovative model in mass practice, its systematic implementation.

The combination of these components forms a "mutually reinforcing cycle" in which each stage of the innovation process increases the innovation potential of the next stage, i.e., it allows to accumulate intellectual, technological, organizational and commercial experience, to direct efforts towards the systematic promotion of the "Innovative idea", to ensure concentration resources in the main, most productive areas of innovation activity.

III. DEVELOPMENT OF THE I-LEARNING PLATFORM

When COVID-19 quarantine began, many problems arose when continuing education in educational institutions was switched to distance learning. The shortage of platforms aimed at organizing distance learning has put the field of education at a standstill. Currently, many resources and platforms have been developed in the direction of solving this problem. As a result of the work done, an innovative platform I-learning was created, which allows forming individual educational resources of teachers. Innovative educational resources embedded in the educational process are uploaded to the virtualedu portal for open use.

Fig. 2. I-Learning platform home page

When creating an open educational resource for the frontend (frontend), html, css, jquery, php (yii framework) were chosen for the backend (backend). The PHP framework provides libraries for frequently used functions, which helps reduce the amount of source code developers have to write from scratch.

The planning of work on the I-Learning platform was organized as follows:

- short-term plan, presentation: preparation in accordance with the learning objectives;
- video lesson: drawing up based on the educational standard (from 7 to 15 minutes);
- creation of level classes in accordance with topics/lectures;
- feedback: organization of communication between the teacher and students on the subject;
- tests: differentiation of time levels and tasks (knowledge, understanding, application coverage of task levels);
- preparation of the server for the convenience and understanding of the user;
-preparation of instructions to the teacher, student, server user.

The stages of creating I-Learning are shown in Fig. 3.

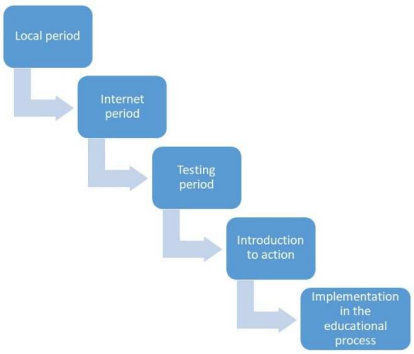


Fig.3. Stages of creating I-Learning

The local stage consists in summarizing the educational material, preparing to provide the student in the optimal form, summarizing the general content, as well as using it on a small training site. And the Internet remains the recommender for synchronous and asynchronous use of these learning materials. Development of video and audio content, preparation of assignments and test questions for organizing feedback via the Internet. At the testing stage, feedback from users is organized with the provision of educational content via the Internet. Along with online self-assessment, surveys and comments, pre-designed questions and suggestions are offered to improve the quality of the content offered.

Teaching materials that have successfully passed the above three stages are widely used by teachers and students to study the discipline or course at the next stage. The process of introducing an innovative educational application into the educational process is carried out as a result of experimental work.

With the help of the platform I-Learning applications can be created to create a virtual environment, using the learning material for any subject or course, assignments for feedback.

The discipline section provides the ability to download courses that can be placed on an open educational resource. To download a lesson, the teacher can go to the data listed on the platform and contact the admin. The admin gives him a personal login, password and constantly provides support in creating the course (Fig. 4).

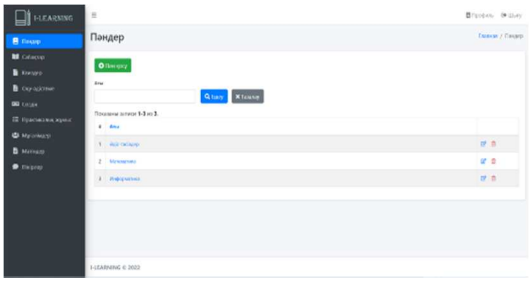


Fig.4. The subject part of the open educational resource I-Learning

After entering the name of the subject or course, the topics are entered into the lessons section separately and the ability to download video lectures and lectures is provided. Topic materials can be deleted, edited, reloaded at any time (Fig. 5).

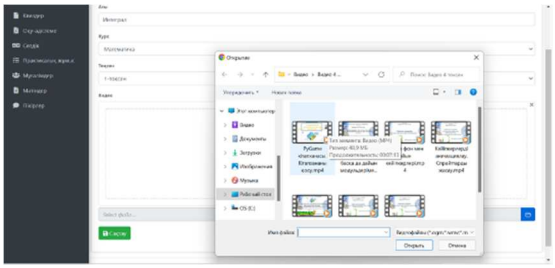


Fig.5. Window for uploading training materials to the I-Learning platform

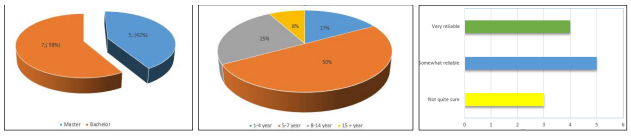
It is possible to use the platform one or more times. Sending, exchanging links to any topic or lesson posted on the platform is easy.

If a teacher requires the download of educational materials in the discipline he teaches, he can register on the I-Learning platform and leave a request. If the application is considered, it will be possible to create interactive gardens in the open. Enter topics for the course (discipline) and, if necessary, replenish the course at the right time by uploading video, audio, assignments, test questions, Other materials.

IV. RESULTS

The experimental work was carried out in two directions. In order to assess the demand for the I-Learning platform, surveys and open interviews were conducted among teachers. A qualitative analysis was carried out to determine the effectiveness of a lesson in informatics using this platform.

The nature of the data is qualitative, it is planned to analyze the data using non-quantitative methods to better understand the context using a demographic survey and open-ended interview questions. This approach provided insight into the perspectives and experiences of teachers teaching high school courses in an online environment, preparing them to teach effectively in an online learning environment. Feedback from participants in the data collection process was organized through chat and mail messengers. Demographics, research questions, and in-depth interview sessions were discussed, providing research flexibility. The study participants consisted of 3 high school teachers who teach online high school courses. The researcher used a targeted selection process from the PU of respondents, the participants of which should be determined by pre-selected criteria regarding a specific research problem, 12 grade 9 teachers providing sa-media agreed to participate from the asynchronous online courses (Fig. 6).



a) b) c)

Fig.6. Qualification level of teachers (a), teaching experience (b), reliability of platform operation (c)

Control tests were conducted in the experimental and control classes in order to compare the quality of knowledge (Table 1, Table 2).

Table 1 - pre-experimental indicator of students

	R≤50%	*50%<R≤74%*	*75%<R≤89%*	*90%>R*	*Quality (approximate value in %)*
Experimental group 27 students	*1*	*7*	*11*	*8*	*70%*
Control group 27 students	*1*	*6*	*12*	*8*	*74%*

Descriptive statistics for determining normality in the program SPSS stat.istics you can choose N>50 criterion Kolmogorov - Smirnov, N<50 criterion Shapir-Wilk. Since in our case n=54, we chose Kolmogorov-Smirnov.

	R≤50%	*50%<R≤74%*	*75%<R≤89%*	*90%>R*	*Quality (approximate value in %)*
Experimental group 27 students	*0*	*1*	*13*	*13*	*92%*
Control group 27 students	*0*	*7*	*12*	*8*	*74%*

Table 2 - indicators of students after the experiment

The results of a qualitative study conducted in the experimental and control groups (Fig. 7).

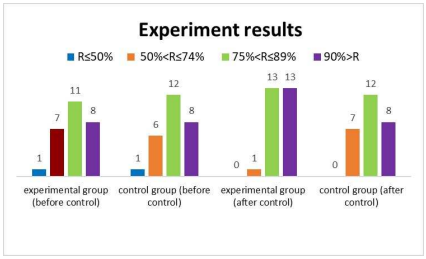


Fig.7. Result of the experiment

In the course of the qualitative analysis, an increase in the quality of students' knowledge was noted using the i-Learning platform, presented in an open mode. Feedback from students, their interest in completing tasks testify to the effectiveness of the material being studied and the platform.

V. CONCLUSIONS

If we implement the provision of educational content in the open access, we will make a great contribution to the development of the educational process. In the research work, analyzing scientific works and normative documents, the stages of the innovation process are identified.

During the research, we achieved the following results:

1. studied the stages of creating an innovative educational application.

2. developed an innovative educational program I-Learning.

In the future, it is planned to supplement the innovative application with content intended for training in various disciplines.

ACKNOWLEDGMENT

This work was carried out as part of project No. AP09259370 "Development of a technological platform for virtual learning based on artificial intelligence approaches" due to grant funding and spending the state grant "Best University Teacher" from the Ministry of Education and Science of the Republic of Kazakhstan.

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