Revista Românească pentru Educație Multidimensională

ISSN: 2066-7329 | e-ISSN: 2067-9270 Covered in: Web of Science (WOS); EBSCO; ERIH+; Google Scholar; Index Copernicus; Ideas RePeC; Econpapers; Socionet; CEEOL; Ulrich ProQuest; Cabell, Journalseek; Scipio; Philpapers; SHERPA/RoMEO repositories; KVK; WorldCat; CrossRef; CrossCheck

2020, Volume 12, Issue 3, pages: 125 - 144 | https://doi.org/10.18662/rrem/12.3/313

Analysis of Platforms and Tools of Open Study in the Conditions of Postmodern Education

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⁵Ivan Franko National University of Lviv, <u>Natalia Dolinskaaaa@ukr.net</u> Abstract: It is proved that in the conditions of the information society, the analysis of platforms and tools of open education and the use of leading information and communication technologies is important. The article discusses conceptual foundations of "open education" as the successor to the conventional education system. The basic characteristics of open education are considered. The purpose of the article is to systematize and determine the essential characteristics of the world's leading platforms and tools for using information and communication technologies in educational institutions in the process of modernizing the education system in Ukraine. The main object of research is an open education system. The methodology of the study consists of such methods as: the method of historical research, generalization, expert assessment, the questionnaire method, analysis and systematization. The article systematizes and characterizes the world's leading approaches to the use of information and communication technologies in educational institutions in the process of modernizing modern educational systems in accordance with the latest requirements of the information society. The necessity of high-quality filling of the system of "total computer literacy" and total digitalization of the national education system by introducing modern platforms and tools of open education, cloud services, modern technical equipment and software, the entry of the national education system into the global educational space at the institutional, environmental level is substantiated and personal level. It is concluded that today, in relation to the modernization of the national education system, our state faces the difficult task of ensuring that the basic approaches, principles and tools of the educational process meet the requirements of the transition to the era of the information society. The main platforms and digitalization tools of open education are considered. Based on the expert assessment methods and the questionnaire method, the most optimal methods of open education were chosen for higher educational institutions of Ukraine.

Keywords: open education, digitalization of open education, information and communication technologies, expert method, questionnaire method platforms and tools of open education.

How to cite: Dzvinchuk, D., Radchenko, O., Kachmar, O., Myskiv, I., & Dolinska, N. (2020). Analysis of Platforms and Tools of Open Study in the Conditions of Postmodern Education. *Revista Românească pentru Educație Multidimensională, 12*(3). 125 -144, https://doi.org/10.18662/rrem/12.3/313

1. Introduction

Among the key provisions of the National Strategy for the Development of Education in Ukraine for the period up to 2021 one of the priority areas is the introduction of modern information and communication technologies (ICT), which ensure the improvement of the educational process and the availability of education. The Ministry of Education and Science of Ukraine (MES) has been given the ambitious task of developing the appropriate infrastructure - such an information and communication educational and scientific environment in which participants in the educational process can be on a daily basis throughout the entire period of training (both in the classroom and beyond), get free access to electronic educational resources, which should help to increase the level of information and communication training and the formation of professional competencies (Zhernova, 2018).

Open learning is a "non-contact" learning with the help of new information technologies (currently the Internet). From this point of view, the interaction between a teacher and a student distance open learning is a form of distance learning: the emphasis is on the student's independent learning, and direct communication with the teacher are minimal or absent.

The backbone factor of open learning is openness, which is understood as a comprehensive characteristic of the educational process, reflecting its ability to take into account the professional and personal characteristics of teachers and students as its subjects, as well as environmental phenomena, which ensures the flexibility of learning, its ability to change basic parameters (educational goals, content component, organizational forms, methods).

A study of information and communication technologies in the education system was studied by a significant number of scientists. For example Paredes-Parada (2018) investigated basic and modern information and communication technologies among university students and teachers.

Buyvol, Bagateeva and Makarova (2018) investigated modern information and communication technologies in the process of student learning.

In development of this National Strategy, the Ministry of Education and Science of Ukraine 2016 developed the "Concept of a new Ukrainian school", in the ninth section of which it is noted that "Organization of a new educational environment requires the widespread use of new IT technologies, new multimedia teaching aids, updating the laboratory base for studying subjects of natural and mathematical cycle. The introduction of ICTs in the field of education will move from one-time projects to a systematic process that encompasses all types of activities. ICT significantly expand the capabilities of the teacher, optimize management processes, thus forming the student's technological competencies that are important for our century. An important step in this area will be the development of infrastructure to provide various forms of training. In particular, an online educational platform will be created with educational and methodological materials for students, teachers, parents and heads of educational institutions (Litvinova, 2017). In this Concept, priority is given to information and digital competence and the directions of its development are indicated: information and media literacy, basics programming, algorithmic thinking, working with databases, Internet and cyber security skills, etc. (Bykov, 2017, pp. 30-45).

The information society lays down a fundamentally new type of knowledge, in which there is a fusion of knowledge and the information environment, a synthesis of the humanitarian, technical and natural science understanding of the essence of phenomena, a dynamic combination of essence and form, when it is not memorizing significant volumes of diverse information that comes to the fore, but mastering a new logistic competence - the ability to quickly find the information you need, filter it, summarize and interpret. Therefore, the reform of the education system in Ukraine necessitates a scientific search and justification of innovative forms and models of the use of ICT in the educational process, educational and scientific process.

The purpose of the article is to systematize and determine the essential characteristics of the world's leading platforms and tools for using information and communication technologies in educational institutions in the process of modernizing the education system into the open education system in Ukraine.

2. Research model and results

2.1. The key toolkit of human life at different stages of human development

Each sphere of human life, requires its own key specific tools, its own special mechanisms and forms of human activity, which are most

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inherent in this era and its intrinsic technological structure and best fit the main functions and tasks of social development on this particular historical stage. Therefore, changing the era (from hunting to farming, from farming to industry, etc.) always requires significant changes in key mechanisms and tools of life. This can be most generally illustrated by Figure 1 (taking into account the relativity of the given periodization, since on different continents and in different countries the transition from one technological structure to another took place asynchronously and at the same time 2-3 different structures can coexist in different regions of the world).

Now mankind is in a state of transition from an industrial and postindustrial society to an information society, which, according to V. Bykov (2017), should be regarded as a stage in the transition to a new promising state of its socio-economic and scientific-technical development - to a society of knowledge, in which knowledge becomes the main source of existence and development, the main resource of functioning and the driving force of progressive transformations (Fig.1).





The revolution that took place in science and technology makes a profound impact on all spheres of human activity. Thanks to information technology, the negative consequences of standardization, centralization and masification, which lead to the loss of individual value by people and turn them into a common homogeneous mass, eventually recede into the past. The social structure of society changes significantly, namely: a change in the social groups themselves, their number will increase, which will naturally lead to a decrease in their average size; the number of able-bodied people is increasing by providing a greater opportunity to work for older people and people with disabilities; the types of interconnections between social groups are changing, the pyramidal socio-economic structure is increasingly giving way to a network structure. Thus, the new stage of society is characterized, first of all, by the development of computer and telecommunication technologies, therefore information becomes the basis of modern society.

Today, the world is undergoing a powerful new revolution, capable of fundamentally changing the lives of people - their work, leisure, ways of uniting into communities and even attitude to themselves. Unlike previous technological revolutions based on matter and energy, this fundamental change affects our understanding of time, space, distance and knowledge. At the heart of the information revolution is the explosive development of information technology (IT), the diversity and possibility of which is limited only by the ingenuity of man himself. Today, the advantage of the informational component of people's activities over all its other forms and components has become apparent.

2.2. Relevance and prerequisites for the implementation of open education platforms

The information (knowledge) society provides mankind with a fundamentally new toolkit for life, which is characterized, on the one hand, by the ability to obtain significant amounts of information without territorial and temporal boundaries - here and now, a few moments after a certain event has occurred. Thus, access to information becomes ubiquitous. Moreover - information is turning into the main source of production of goods, services and stuffs. But, on the other hand, even an outstanding person in the conditions of an information infestation changes dynamically, it turns out to be untenable to operate with information flows, to expertly

navigate them without the help of information and computing technical means, appropriate software. The former lack of mass knowledge has turned into a lack of information and communication competence. It is no coincidence that in the recommendations of the European Parliament and the Council on key competencies for lifelong learning necessary for personal implementation and development, active citizenship, participation in public life and employment, ICT competencies are given a key role as a means of obtaining all other competencies (Buinitskaya, 2019).

The concept of competence implies the ability to use at least the key tools of human life at this stage of the development of civilization. Therefore, one of the main functions of society and the state as an institution for the management and regulation of public relations is to educate new generations and prepare a person for activities in the value, regulatory and technological conditions of the existing formation. These processes occur within the framework of the policy of socialization (for youth) and resocialization (for older generations at the stages of transition from one formation to another). Ukraine today is just at such a stage when there is a transient process of a widespread transition to the information society and the future of our state, society, each of us will depend on the ability to "fit" into this process, to ensure the massive acquisition of the necessary competencies for fluent possession of the key tools of the information society us. Indeed, according to Buinitskava (2019): "the modern labor market requires higher education institutions to prepare competitive graduates who are able to constantly study, improve their qualifications, have soft skills, master the skills of the 21st century, be able to use everything that appears in science and practice adapt to market transformations and improve their qualifications, be IR-competent, constant mastery of new knowledge, effective use of mobile and cloud technologies, communication Nation and Colabation electronic are mandatory requirements for those who want to be successful ".

This necessitates a high-quality filling of the system of "total computer literacy" and total digitalization of the national education system by introducing modern open educational platforms and tools, cloud services, modern technical equipment and software in educational institutions, entering the national education system into the global educational space at the institutional, environmental and personal level. According to Tarnavskaya (2019), "informatization of education is a key condition for the training of specialists who are able to work in radically new, increasingly

automated, working conditions; navigate in huge volumes of information flowing continuously; competently process it, store and transfer it". To this end, our state, in accordance with the "Geneva Declaration of Principles" ratified by the Supreme Council of Ukraine, has undertaken:

- improve access of documentation and communication infrastructure and technologies, as well as to information and knowledge;

- increase the computer competence of citizens;

- increase confidence and security in the application of ICT

- create an enabling environment at all levels;

- develop and expand the use of ICT applications;

- promote and respect cultural diversity,

- recognize the role of the media;

- pay attention to the ethical aspects of the information society, as well as encourage international and regional cooperation.

The strategic directions for the development of ICT in European countries are the development and testing of innovative pedagogical approaches, models and strategies for education and training, increased attention to the use of ICT at all stages of training, the creation of an open platform for information technologies, electronic content, services, pedagogical concepts and approaches, models of motivational mechanisms, cloud technologies in the educational space, providing a higher level of digital competence and the use of ICTs throughout the education system, promoting the key importance of competencies in general, higher education and adult education, introducing an open educational environment of the higher educational institutions at the managerial level, modernizing the development of e-learning systems, ensuring an effective and safe infrastructure, introducing e-learning in higher education school as a way to implement the tasks of open education, ensuring quality through regular measurement and evaluation, analysis of impact indicators ICT for training and education at the national level (Tovkanets, 2018).

Based on a theoretical synthesis of the world experience, we can offer the following visualization of a number of the most common forms of the latest tools for digitalization of the open educational space (Fig. 2).

Figure 2. Open Education Digitalization Platforms and Tools.



Source: Developed by authors

Global Education Net is a global educational virtual environment that gives any participants the opportunity to use the information databases of the world's leading educational institutions, national libraries, museum expositions and other educational material. A modern global educational virtual environment has arisen and is being spread on the basis of various kinds of information educational centers, for example, ENIRDEM - the European network for improving research and development in educational management; IEA - International Association for the Assessment of Educational Achievements; IBE - International Bureau of Education; INISTE - International network for scientific and educational information; EURYDICE European Union Education Information Network; EUDISED is a network of European documentation and information systems for education, CEDEFOP is the European Center for the Development of Vocational Training and others (Tverezovskaya, 2018).

As Malitskaya (2019) notes, the network structure of such cells significantly expands the possibilities of their activities, in particular, the organization of scientific, informational, research conferences, seminars, symposia; implementation of educational projects and programs; design and development of innovative pedagogical, information and communication technologies; printing of analytical, methodological, informational publications; the creation of information networks for the dissemination of scientific and educational information and the exchange of experience.

Global education is becoming increasingly important for education policies and practices in developed countries. It is in this context that the US government sees the information and technological modernization of education as a political perspective for the development of society.

It is worth noting that one of the above programs - Global Education Network Europe (GENE) has recently celebrated 15 years of work. GENE provides policy links to enhance and improve global education in Europe. This platform covers the main problems of modern open education in Europe: national problems, structure development, the study of politics and interaction in educational systems (Hartmeyer, 2018).

Education Roaming (eduroam) - an international roaming service of scientists and teachers of higher educational institutions is a "guide" to the global educational environment. It is not a classic online tool for accessing knowledge bases, but it does much more, since any registered teacher, scientist, graduate student, and even students are provided with the possibility of free roaming access to the Internet and through it the opportunity to go out and use any open educational resources. From our own experience, we can assure that during trips to conferences in Poland, the Czech Republic and Germany it was extremely convenient and easy to get free access to eduroam, which is provided in most territories of each university or other educational institution in the country.

Google Apps for Education and other cloud-based network tools of open education systems are ICT tools that provide the formation and maintenance of online electronic information resources and cloud services of an open educational and scientific environment, the implementation of design technologies and the use of open cloud-based pedagogical systems. Thanks to cloud computing services, the path to the development of powerful methods of multiple access to electronic resources is opened, the creation on this basis of better educational software products. This, according to Shishkina (2016), will contribute to improving the quality of education, creating conditions for better meeting the educational needs of a wide range of users. The most important cloud-oriented network tools Bykov, (2018) include: clouds oriented scientific and educational information networks and infrastructures. Clouds oriented corporate information systems and services; online electronic educational resources and services; educational and scientific laboratories of remote educational interaction and others.

Open Educational Resources (OER) - open educational resources, as a rule, are free and open to all in free access in digital format, training programs, textbooks, manuals, online courses, video lectures, educational tests, multimedia presentations including the corresponding software of large educational centers and universities. The mission and main goal of such repositories is not just ensuring access to education for as many people as possible from any corner of the world, but a policy to improve the quality and diversity of educational opportunities of any person in the modern world, in which education is recognized as the main guarantee of economic, social and environmental progress.

According to Bykov, (2018) over the past 10 years, the OER community has grown significantly, and the impact of OER on educational systems is a common element of educational policy, as open educational resources are an important tool for innovation in learning, education and science. The governments of developed countries see the future of education in the 21st century as a joint activity of the public sector, states and interstate institutions within the global educational environment to comprehensively support innovative forms and models of teaching and learning, awakening the imagination and creativity of a person, the desire for continuous improvement and communication with others for educational purposes.

Among the most famous open resources today, Bezzub (2017) names the following innovative university repositories launched by UNESCO: MIT Open Course Ware (project of the Massachusetts Institute of Technology for publishing in the public domain materials of all courses of the institute), Connexions (project of Rice University, Texas, USA), Open Yale Courses (open Yale University online courses), MERLOT (California State University program), Open Learn (Open University education platform, UK).

Lifelong Learning (LLL) - this idea is based on the understanding that "today it's not enough to graduate from a higher educational institution and work professionally, possessing ICTs at the level of an ordinary user. Transience the updating of fundamental and applied scientific knowledge of knowledge of a technologically industrial nature creates the conditions when there is a rapid aging of professional knowledge, and therefore a decrease in the competence of an employee by 50%, takes place in less than five years", as a result of which the constant support of a person's professional competencies requires constant mastery of new knowledge throughout his active life, which includes obtaining degrees and diplomas in his spare time; professional courses, including for the purpose of staff development; adult education; second education, etc..

The ideas of lifelong learning are dedicated to the special Memorandum of the European Commission, which enshrines 6 basic principles of lifelong education:

Principle 1. New basic knowledge and skills for all.

Principle 2. Increased investment in human resources.

Principle 3. Innovative teaching and learning methods.

Principle 4. A new system for assessing education.

Principle 5. Development of mentoring and counseling.

Principle 6. The approximation of education to the place of residence.

Today, different formats of continuing education projects cover more than 120 countries of the world, and in 2004 the specialized Skillsnet network was created in the structure of the European Center for the Development of Vocational Training, which includes highly qualified researchers and representatives of education throughout of the world. They submit for consideration, discuss and analyze the results and research methods for identifying skills, change in accordance with the time and requirements of the labor market, and also predict long-term prospects for identifying new skills that will be in demand in the labor market after some time.

Institutionally, the idea of lifelong learning, for example, in Poland, came to be realized in the form of the so-called "third-age universities," existing at most higher educational institutions of the country and aimed at helping active pensioners find some kind of employment in the modern world.

Open Journal Systems - and other electronic educational and publishing resources are platforms for supporting and assisting educational institutions in digitalizing their activities in the field of information support for testing and reporting and disseminating research results, including the creation and support of repositories of libraries of higher educational institutions. Spirin (2017) include electronic open journal systems of the type Open Journal Systems as a special type of educational activity (training, etc.) that exist in electronic form, are placed and served in educational systems on electronic data storage devices, is a collection of electronic information, objects (documents, documented information and instructions, information materials, procedural models, etc.).

SaaS (SageMathCloud, etc.) is a specialized software for educational services, including cloud services. Shishkin (2016) highlights the most common software, in particular such as SageMathCloud, Microsoft Office 365, Amazon Web Services, Microsoft Azure, Microsoft Azure, Xen, WM Ware, etc.

Long-Distance Online Learning (D-learning) – is the remote online education and not such an innovative product for us, but it is a rather successful practice in the Ukrainian educational environment to use ICT in the open educational process. So, according to the data of Veter (2017) and Keyes (2018) in Ukraine, about 30% of educational institutions stated that they already have or plan to organize distance learning.

The most famous universities in the world have their own open education units and provide educational services to students from the most remote corners of our planet. Not so long ago, the software company Adobe Systems proposed its own "electronic education" system based on its own software tools and systems - "Adobe e-learning". Adobe e-learning consists of the following components: Adobe Connect electronic interactive synchronous and distance learning system, a complete set of tools for the professional development of electronic educational content Adobe eLearning suite, a system for the rapid development of electronic training courses Adobe Captivate.

2.3. Methodology for choosing the optimal open education platforms and tools

As a methodology for choosing the optimal platform and tools for introducing an open education system in Ukraine, we have chosen an expert assessment method.

The expert method for assessing objects, processes, and phenomena consists in implementing the procedure for obtaining the corresponding assessment (result) based on the group opinion of specialists (experts) (Pankova et al., 2018). Such a comprehensive, generalized opinion, of course, is more accurate (that is, objective) on the individual opinion of each individual specialist.

The whole process of expert evaluation can be divided into separate stages (Collopy et al., 2001):

1. The formulation of goals.

2. The choice of the survey form.

3. Preparation of information materials, questionnaire forms, moderator (manager) of the procedure.

4. Selection of experts.

5. Examination.

6. Processing and analysis of the results.

7. Preparation of a report on the results of expert evaluation.

Expert assessment involves the creation of a collective mind with great potential in comparison with the capabilities of the mind of an individual person.

Based on the standard method of expert assessment, we have improved it in the context of optimizing the presented task in finding the best platform for open education. The originality of our expert assessment method lies in the fact that we have selected a mixed group of experts, while in most expert assessments the representatives of experts belong to the same industry. Given the importance of the information technology field in the open education system, in our opinion, the assessment of experts in the field of information technology is no less important than the opinion of experts in the field of education.

To conduct an expert assessment, all experts were selected based on the following criteria for the selection of experts:

1. The level of competence of the expert in the matter. The following indicators were used to determine the level of competence: work experience in the field of education (at least 10 years), position of an expert (all experts must occupy leading teaching positions within the place of his work).

2. Active scientific, practical or theoretical activity of an expert in the field of education, in particular in the open education system

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3. An expert should not be a decision maker based on the information received. He can only be an adviser to someone who takes responsibility for setting a goal, plan, program or project.

Due to the difficult epidemic situation in the world caused by the pandemic of the COVID-19, we were forced to restrict communication with experts through remote contact through correspondence and online communication.

To evaluate the platforms and tools of open education, we have chosen more than 20 different tools and platforms. In addition to those mentioned in the text, the following platforms participated in the expert assessment process: iSpring, WebTutor, GetCourse, Memberlux, Webtutor, MOOCs, Online Test Pad, EdEra, Blackboard Learn, Eliademy. We have not made a detailed description of the above platforms because of their similarity to the described. After conducting an expert assessment, they selected the following elements, most optimal for our education system, of introducing open education methods.

Computer Based Training - computer support for training involves such a procedure for organizing the educational process and cognitive activity of youth, in which information networks, computer and communication equipment, and software are the key tools. This procedure is based on the experience of the subjects of training verified accurate sequential work with multi- and hypermedia, hypertexts, virtual reality created by synthesizing verbalized and non-verbalized messages, as well as synchronizing timespatial information sources with visual-spatial. An example of the successful implementation of the computer support system for teaching in Ukraine is given by Tadevosyan (2019), describing the activities of the Laboratory for the Use of Information Technologies in Education (VITO Laboratory) of Sumy State Pedagogical University named after Nikolaev (2019), established in 2011. VITO laboratory is involved in the implementation of information technology and digital educational resources in the educational process, in particular, the development of electronic textbooks, the use of flash animation technologies in computer science and physics classes, the organization of gaming teaching technologies based on MS Power Point, etc.

Prometheus is a platform of Ukrainian mass online courses, which has been operating since 2014. I. Bezzub (2017) calls the Prometheus platform one of the most successful projects, currently has an audience of hundreds of thousands of students, offers dozens of free online courses, presented in different directions: civic education, history of Ukraine, entrepreneurship, the basics of public policy, data analysis, IT technology, the basics of information security and many others.

Bring Your Own Device (BYOD) - integration of personal IT devices into the educational process. This project, launched by Microsoft, is based on the phenomenon of psychotechnology, also known as "bringing its own technology" and is nothing more than an attempt to "drag" young people into educational processes who are used to not letting go of their own gadgets (this is already quite used to us, when pupils or students during the lesson pay more attention to their smartphones and tablets than to the teacher). The BYOD project addresses such students - bring your own device and work through it. To do this, Microsoft provides the integration of personal gadgets with digital training modules and programs, cloud services, a variety of applications, even of a legal nature. According to the developers, there are four key conditions that will enable students to use their own devices in the classroom:

- providing students with access to the Internet;
- help in using devices on the network;
- secure information space;
- ensuring the coordinated work of the group (Veter, 2017).

BYOD allows the owner to get a universal pocket encyclopedia that helps to develop surfing skills in the Internet, orientation in information arrays, information search and selection, digital integration and communication, and the like.

After the election of these methods and tools of open education, they were introduced into one of the higher educational institutions of Ukraine as an experiment in innovating open education. In order to assess the quality of implementation of the goal of platforms and methods of open education, we selected a group of respondents (represented by 20 students and teachers selected by a higher educational institution) who, using the questionnaire method, evaluated the quality of implementation of these methodologies. To form the aggregate of respondents, we chose the methodology of a special (professional) sample. The reason for choosing such a number of respondents is that this survey is the initial stage for subsequent studies and gives an initial idea of the most optimal platform or tool of open education.

When conducting a survey, respondents were asked the following questions:

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1. Rate the usability level of the open education platforms and tools described below (1 to 10).

2. Estimate the level of accessibility of using the open education platforms and tools described below (from 1 to 10).

3. Evaluate the level of integration of the open education platforms and tools described below in the system of your educational institution (from 1 to 10).

4. Evaluate the level of implementation of the open education platforms and tools described below in the system of your educational institution (from 1 to 10).

5. What are the possible problems that occurred when using each of the open education platforms and tools?

6. What are the benefits that have emerged when using each of the open education platforms and tools?

7. Indicate the name of the open education platform or tool that you have identified as the most effective in the context of your institution.

According to the results of the survey, the most effective method of implementing an open education system has become method Bring Your Own Device (BYOD) as the most effective method of implementing the open education system, since according to the results of the questionnaire it was rated as the most comprehensive and one that has the largest number of tools and mechanisms in its arsenal.

Thereby, the widespread introduction of the above information and communication tools in the educational environment of Ukraine will contribute to its further digitalization and more efficient use of the technical, technological and educational tools that already exist in the global educational environment, because today only globalization and integration processes in world science and education are fast the development of ICT and their intensive implementation in the educational process of higher educational institution can improve the quality created by acquiring new knowledge and accelerating the development by students and future doctors of the philosophy of educational competencies and scientific research skills, it is now impossible without the use of ICT both in the educational process of vocational training and at all stages of scientific research - design, information retrieval, analytical and modeling, experimental research, narrative and practical. Based on the review, we can conclude that the quality of the system of "total computer literacy" and the total digitalization of the national system of domestic education is necessary by introducing modern platforms and tools of open education, cloud services, modern technical equipment and software in educational institutions, entering the national education system to the global educational space at the institutional (MES, educational agencies and institutions), environmental (varied between national and local educational networks) and personal (scientists, teachers, post-graduate student, student) levels.

3. Conclusions

So, in the course of the reconnaissance, and subsequently the method of expert assessment and questionnaires, a number of modern platforms and digitalization tools of open education were highlighted and characterized, which, in our opinion, can be integrated into the development of a new education system in Ukraine in a postmodern context. Today, our state, in terms of modernizing the national education system, faces the difficult task of ensuring that the basic approaches, principles and tools of the educational process are in line with the modern requirements of the transition to the era of the information society and knowledge society. It is important to borrow world experience in the application of information and communication technologies in educational institutions, investing funds and efforts in the development of a domestic innovative ICT product, focusing educational reforms on the technologicalization and digitalization of the educational process, so as not to remain on the side of world development towards the global information society.

This task requires a fundamental review of established approaches to the organization of national education systems, traditionally aimed at albeit prolonged, but "one-time" provision of a certain set of knowledge and skills necessary for the transition to the next stage of life. Indeed, today it is no longer enough to obtain certain knowledge at a time, which should be enough "for life". Actual is the change in the paradigm of education, in which the main advantage is the comprehensive informatization of systems and educational institutions, the total digitalization of the educational process and its integration with the national and world wide Internet.

The study is not without limitations, it concerned only individual instruments on the platform of open education. Expert evaluation was carried out only within the framework of data available to them. That is why the next step will be the expansion of expert groups and implementation attempts at new higher education institutions.

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