

Original article

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Development of Online Courses as a Means of Improving the Domestic Lifelong Learning System

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Abstract.

Introduction: the article considers a systemic nature of the modern educational process and the necessity to provide education not only on the basis of a direct teacher–student interaction, but also indirectly, i.e. through distance forms. However, there is a problem of the lack of certain rules and requirements for creating online courses as completed parts of a specific industry or subject that is being taught. *Purpose:* to analyze the effective tools available in theoretical research and practice for progressive development of the lifelong learning system in Russia in the conditions of digitalization of the society with regard to the possibilities of both full-time and correspondence education. The specifics of the formation and inclusion of online courses in the educational process of departmental universities are studied separately. *Methods:* comparative legal, statistical methods of description, and interpretation. *Results:* the authors present a model of the lifelong learning system. The article discusses development of online courses that are supposed to make a lifelong learning system in Russia more effective and accessible to all categories of citizens. Capacities of online courses are analyzed and the algorithm for designing online courses in relation to the system considered is developed. The authors highlight features of forming an online course system for departmental universities, programs and the training regime, which may differ significantly from civilian universities. *Conclusion:* the use of the proposed methodology will form a unified approach and requirements for forming online courses to implement them in the educational process.

Key words: lifelong learning; design; online courses; digitalization; capacities; lifelong learning system; lifelong learning methods; use of online courses in a departmental university; limited access information.

5.8.1. General pedagogy, history of pedagogy and education.

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Introduction

Trends relevant to the education system as a whole, in the context of its transition to a new, digital format, contribute to the formation of a special mission of education – to adapt the population to conditions of the modern world [1]. This task can be fulfilled in case of introduction of such an education model that will give a modern person the opportunity to obtain flexible competencies for self-realization, regardless of age, location, financial condition, physical characteristics and other factors [2]. Russian and world experience demonstrate that the lifelong learning system as a unified educational system that considers education as a continuous process ensuring progressive development of a person's creative potential throughout the entire period of life is capable of comprehensive development and improvement of this personality [3]. At the same time, there is no clear methodology for the lifelong learning process, capacities of the tools to organize this process, in particular modern digital tools such as online courses, are not sufficiently disclosed. There are no recommendations for the development of online courses in the context of lifelong learning [4, pp. 36–38]. Thus, the relevance of the study is substantiated by the need to study online courses, since they are actively introduced into the lifelong learning system in Russia.

The idea of lifelong learning was already discussed by Confucius, Socrates, Aristotle, Plato, Voltaire, Rousseau and others. Nowadays, most world countries support the idea of lifelong learning [5]. In the context of global digitalization of society, implementation of lifelong learning is being updated, views on the process of education, its goals and forms are rapidly changing. To adapt a person to realities of the modern world, we need an education system that can quickly respond to all changes, form a person capable of self-education, willing and able to constantly learn.

Researchers agree that it is the system of lifelong learning that is potentially ready to solve these problems [6].

Lifelong learning system model

To determine a role of the lifelong learning system, we analyzed the Federal Law No. 273-FZ of December 29, 2012 “On education in the Russian Federation”, analytical materials of the Ministry of Education and Science of Russia and the National Foundation for Personnel Training based on the results of the National Project “Education” [7]. We came to the conclusion that the classical education model assumes a linear educational trajectory (conditionally, kindergarten – school – university) with a ready-made organizational and managerial structure. In this case, the educational process, formed by the state, educational institution, teacher, assigns the student only the role of a passive participant in the educational process. In our opinion, the education model can be fundamentally new. The focus is on integrating the lifelong learning system into the classical model of the education system. Figure 1 shows a model of such a system. This model of the lifelong learning system clearly demonstrates that the blocks and levels of education are a single system, and the learning process can be represented as an educational trajectory. This will be facilitated by the inclusion of the additional education block in all other blocks and levels of the education system. For example, due to short-term training programs, people with higher education can master the basics of a new profession and re-train in a short time and, consequently, change the field of activity, have a new hobby, engage in income-generating activity, significantly expand a range of competencies, determine directions for further personal and professional growth, etc. [8].

It becomes important for students to be more independent when choosing areas for education, educational resources and self-education technologies.

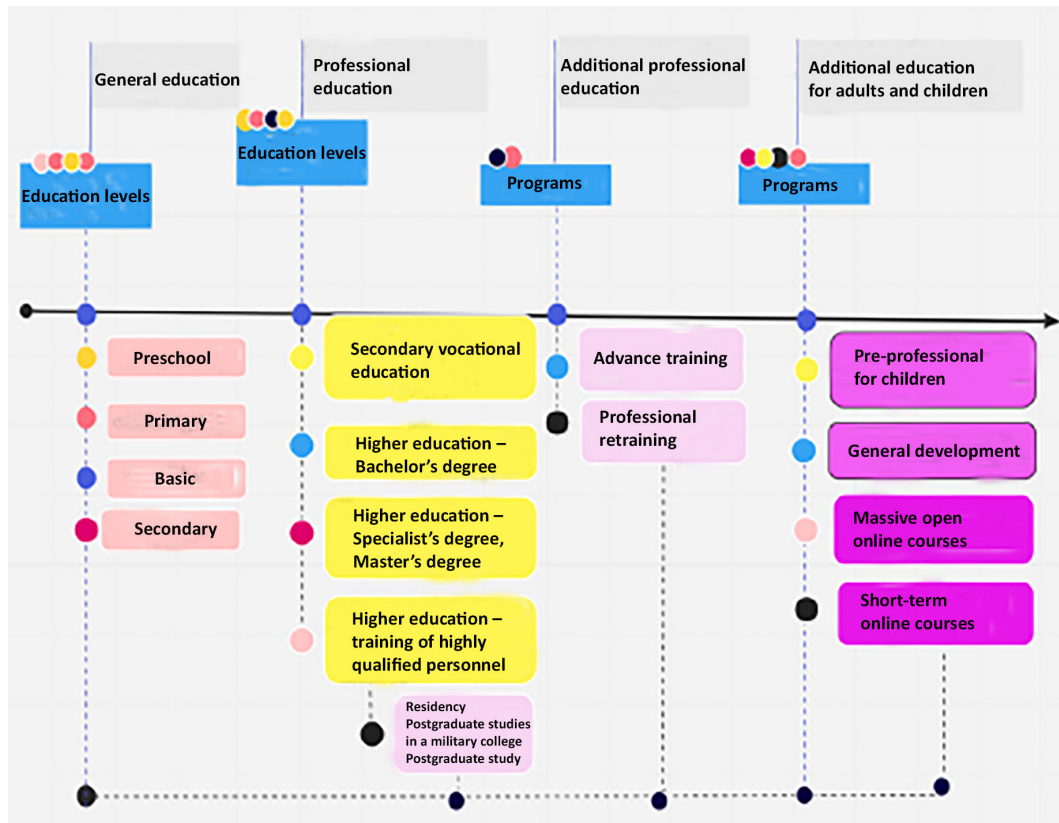


Figure 1. Lifelong learning system model

The presented model of the lifelong learning system assumes a practice-oriented approach to organizing the learning process with regard to the trends existing in the labor market. The model is open, i.e. the state, social institutions, educational organizations, as well as employers who are actively investing in the development of employees today are participants in the lifelong learning system. This allows to reduce staff turnover, makes it possible to adapt to new economic models. Openness and flexibility of the lifelong learning system forms a number of roles inherent in lifelong education in the structure of the classical education model, including: 1) the possibility to choose learning directions, forms, and conditions; 2) an open market of educational programs and modules instead of a pre-established standard; 3) enrichment of the education system with new principles, technologies and methods to individualize learning, as well as promising technical solutions; 4) adapting the education system to dynamically changing needs of the individual, society, economy; and 5) the possibility to build a long-term trajectory of individual self-development.

The latest tools and technologies are required to implement lifelong learning [9]. Remote interaction of all participants of lifelong education. This form makes the education process accessible, convenient, flexible, and is most often carried out with the help of online courses [10].

Nowadays, online courses are very popular. Analysts argue that, by 2025, the volume of investments in online education is to reach 1 trillion US dollars instead of 350 billion US dollars previously predicted [11].

Having analyzed reasons for the high demand for online courses among people of different ages and social status, we found out the following:

- they give people, for example, who have lost their jobs, the opportunity to learn a new, more stable and in-demand profession in a short time, and monetize their hobby;
- they provide an opportunity to receive a re-training or training certificate;
- they implement an individual learning trajectory through personalized learning, i.e. individual learning pace with regard to the level of abilities, competencies, and requirements of each student [1];

- there is a wide selection of relevant programs that solve specific tasks of students;
- they are economically feasible;
- the absence of restrictions on time and place of classes helps better balance work and study.

High demand for online courses in our country shows their capacities in the lifelong education system, since it creates the basis for a career throughout life [12]. Education becomes flexible, students are able to build individual educational trajectories, choose courses, and constantly update competencies [13]. In this context, we consider online courses as an educational resource.

In the course of the study, we analyzed online courses implemented by high-ranked edtech companies providing additional and business education and programs for children (Foxford, Uchi.ru, Skillbox, Yandex.Practicum, Like Center, Netology, SkillFactory). Online courses of the companies presented above are publicly available on the web resources. They are characterized by the following: a clear structure; the

training material is divided into difficulty levels, modules, blocks, and individual classes, thus forming a system; a course program is built depending on the learning outcome; a student achieves a specific result; a course presupposes formation of skills, that is, it is practice-oriented; the training is accompanied by tutor and methodological support; the pedagogical design is clearly traced.

Algorithms for creating online courses

These parameters actualize the problem of developing an algorithm for creating online courses to simplify the choice of tools for preparing and replicating the course, reduce labor costs for its development, as well as unify online courses, preserving the specifics of the subject and innovation of the course developer. When working out an algorithm of online courses, we relied on works of O.N. Taranets [14] and G.A. Krasnova [15]. The algorithm for developing online courses in the system of lifelong learning (Table 1) is elaborated on the basis of the analysis of online courses provided by the edtech companies discussed above.

Table 1

Algorithm for the development of online courses in the system of lifelong education

Trends (blocks)	Stages	Measures	Implementation period	Expected result
1	2	3	4	5
BLOCK A Online course development	A1. Planning	A1.1. Development of the concept and visualization of the final result (goal) of the course	Individual, depending on the experience, competencies of course designers, technical support, complexity and volume of the course itself; Block A is implemented for a period of no more than 30 calendar days	Online courses of academic disciplines, massive open online courses are developed and presented
		A1.2. Study of the target audience		
		A1.3. Choice of the course format (online or mixed training)		
		A1.4. Choice of the information transmission format (synchronously, asynchronously)		
		A1.5. Choice of methods (for example, inverted classroom, gamification, brainstorming, etc.)		
		A1.6. Development of instructions on the use of IT products for students, training instructions in general: key dates, contact information, data security and protection, FAQ (frequently asked questions)		
	A2. Designing	A2.1. Development of the abstract and content of the course		
		A2.2. Development of the course structure		
		A2.2.1. Determination of the number of modules, topics, classes, total labor intensity of the course		

1	2	3	4	5
		<p>A2.2.2. Development of course resources: video lectures, presentations, text documents, electronic textbooks, examples, research results, tests, assignments, glossary, hyperlinks</p> <p>A2.3. Choice of a technological system for “packaging” of the course (LMS) [16].</p> <p>A2.4. Development of an assessment system and forms of control</p> <p>A3. Launch</p> <p>A3.1. Creation of a community</p> <p>A3.1.1. Organization of a chat with students, for example in Telegram</p> <p>A3.1.2. Creation of a course community for students, teachers, experts (for example, a group on a social network)</p> <p>A3.2. Organizing student support (tutor support, consultations, chatbots)</p> <p>A3.2.1. Monitoring student activity during classes in synchronous format, remotely in asynchronous format</p> <p>A3.2.2. Checking homework, sending comments to the assessment (determination of growth points), for example, via e-mail</p> <p>A3.3. Development of an encouragement system</p> <p>A3.4. Feedback</p> <p>A3.4.1. Conducting surveys before the start of the course</p> <p>A3.4.2. Feedback in the form of a questionnaire after each lesson, in the middle and at the end of training</p>		
BLOCK B Online course imple- mentation	B1. Orga- nizational preparation	<p>B1.1. Study and elaboration of federal regulatory documents –regulatory framework for the use of distance education technologies and distance learning in the higher education system</p> <p>B2. Decision of the management (responsible) body of the university on approval of the Regulations on organizing the educational process with the help of distance education technologies, e-learning, introduction of additions and amendments to the existing local regulations in accordance with the approved Regulations</p> <p>B1.3. Development of electronic information and educational environment, provision of technological means, information equipment</p> <p>B1.4. Further development of local regulations and documents regulating forms of accounting for all types of classes of students in the electronic information educational environment, pedagogical load of teachers, procedure for current and intermediate certification</p>	Block B1 is implemented for a period from 7 to 14 days;	The university has defined the concept, goals and objectives, responsible persons (or structure), timing of online courses, implemented management decisions of the university management in accordance with regulatory documents to continue working on improving the process of developing and implementing online education at the university; regular professional development of teaching staff on the preparation and implementation of training with

1	2	3	4	5
	B2. Creation of a structure whose competence includes assistance in the design and implementation of online training (support service)	B.2.1. Organization of the work of the educational process management structure through an electronic resource, the functions of which, for example, consist in scheduling classes, electronic monitoring of academic performance, communication with participants in the educational process, etc.	Block B2 is implemented within 2 months, depending on the structure of the educational organization and the speed of implementation of management decisions;	the use of electronic distance learning technologies is carried out; cooperation agreements are signed and being implemented with other educational organizations in order to develop lifelong learning and exchange experience
	B3. Professional development of employees	B3.1. Organization of staff training in online course design technologies: conducting methodological seminars, trainings on the use of electronic systems B3.2. Certification of employees in proficiency in modern online learning technologies	Blocks B3 and B4 have a prolonged action	
	B4. Cooperation	B4.1. Organization of network interaction of educational institutions of different levels of education, also orientation		
BLOCK C Online course quality expertise	C1. Comprehensive expertise of the online course	C1.1. A legal stage of the expertise is carried out on the basis of existing regulations, educational standards, establishment of copyright C1.2. A technical stage of the expertise includes a test check of the course, when the technical solutions embedded in the course, operability of the LMS system and services are checked [16, p. 25] C1.3. A didactic stage of the expertise includes an assessment of the content of the course and its methodology, in terms of the compliance of the course with the Federal State Educational Standard of Higher Education, the work program of the discipline, reliability of the information provided about the course, the scientific level of educational materials, including their relevance, novelty and practical application	Block C 1 is implemented for a period no more than 1 calendar week	Expertise of the online course quality is carried out to increase competitiveness of the university, maintain quality at a high level

Source: formed by the author on the basis of the conducted research

The presented algorithm for developing courses of academic disciplines, modules, additional education (the article does not refer to currently implemented by general and higher mass open educational courses), can be used by specialists who develop online courses, education organizations, for example, to create

since it clearly demonstrates the planning process, analysis of possible shortcomings in the curricula of an educational organization, which allows avoiding, rather than solving, possible problems. Being a kind of a guide, the developed algorithm helps adjust activity areas to boost the efficiency and competitiveness of the educational organization as a whole, which is a structural component of the lifelong learning system.

In a departmental university, students can miss lectures and practical classes due to the need for internal service, sufficiently long business trips, field training sessions, etc. It actualizes the use of electronic learning technologies (including in the form of online courses) in the process of training and preparation for pass/learn exams.

So, a cadet can undergo in-service training and independently choose the time and pace of mastering the program convenient for him/her.

Besides, the choice of lifelong education methods and the use of online courses in a departmental university is predetermined by a significantly high probability of the study of issues related to state and other types of secrets. The use of online services, especially those related to servers outside the Russian jurisdiction, is prohibited. Consequently, the use of such technologies is possible only for the study of general education subjects with strict control of the information contained therein.

A thorough preliminary study of the material contained in the course is also important. If during classroom classes a teacher can use accumulated material, such as excerpts from monographs, scientific articles, statistical data, etc., and discuss it, an online course presupposes students' work with online libraries. Therefore, it is necessary to determine those online knowledge bases that will be available to a course listener and provide links to the recommended literature.

Another specific feature of this type of courses is the possibility of applying different types of control. Considering that cadets of departmental universities, as already indicated, in addition to studying, may be engaged in in-

ternal service, business trips and other types of additional duties, the use of distance forms of control (tests, submitting reports, filling out forms, and taking distance exams with the help of ProctorEdu) is an important and necessary part of this type of courses.

In the field of methodological purpose of the means of information and communication technologies, a number of authors [17] divide online courses into the following subtypes, each of which has an independent focus and learning outcome: 1) training (video lectures and practical classes); 2) simulators (tests, models, and tasks); 3) information retrieval and reference (reference legal systems, information aggregators, and databases); 4) demonstration (visualizers of the studied object or process); 5) simulation (tools simulating a real situation for practicing skills); 6) laboratory (distance experiment); 7) modeling (modeling, i.e. independent creation of the process as a result of studying the topic); 8) calculation (a means of automating calculations and various operations); 9) learning and play (creating educational situations that help students realize their activities while playing).

Combination of at least 4 elements from the proposed ones, depending on the planned training tasks and groups of students, will, in our opinion, make the educational activity complete.

Conclusion

Online courses actually have significant capacities as an effective means for organizing the process of lifelong learning. The algorithm for working out online courses described in the article corresponds to their specifics.

To realize lifelong education, it is crucial to create large platforms for self-education and mutual training of all categories of citizens, including foreign ones, develop a system for confirming qualifications obtained through the system of lifelong learning through online courses. At the state level, it is reasonable to carry out educational work that changes people's habits. Thus, the habit of learning throughout life, formed in childhood, turns into a skill of lifelong education, which is closely related to improving the quality of human life.

Further research can be focused on developing technologies that raise effectiveness of online courses and elaborating requirements for teachers' competencies who implement online courses in the lifelong learning system. At the state level, it is necessary to develop standards to assess the quality of professional competencies of employees and lifelong learning programs. At the same time, it is necessary to take into account the specifics of an educational institution, in particular, regime of the educational institution and types of information. Special attention should be paid to distance educational activities in the structure of departmental universities, taking into account their specifics of education – combining training with business trips and official duties, the inadmissibility of transmitting limited access information through communication channels, the complexity of working with additional sources of information

for self-education. Control over the content of online courses and their distribution through open communication channels in departmental universities should be carried out by an authorized employee. If the educational program provides for the study of official, state or professional secrets, the use of an online course should be reviewed for the study of these issues exclusively in the classroom. At the same time, if the educational program can be interrupted by business trips and regime events, the use of online technologies is the means that will create the opportunity for a cadet to learn or revise the material at a convenient time.

These proposals will contribute to further improvement of the domestic lifelong education system, improvement of the level of digital literacy, general and special knowledge, accessibility and resource-saving educational activities.

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