

# **Analysis of Trends in the Development of Informational Educational Resources in Modern Conditions**

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*The purpose of the article is to analyze the trends in the development of informational educational resources under modern conditions. To carry out the research, the following methods were used: comparison, concretization, abstraction. In the results, it was researched: the development of university educational resources, the use of the Moodle platform, Open education resources, Coursera, and others. In the conclusions, it was noted that the creation of electronic courses will attract students and external listeners in the future. It is noted that the use of modern educational resources has certain threats: reducing the effectiveness of education due to the need to constantly pay for Internet services, the lack of highly qualified and competitive professionals, the depreciation of traditional education, the limitations of information resources created in other states (impossible to implement through sanctions, etc.). However, this type of education should be considered as a certain addition to already formed methods.*

*Keywords: educational resources, education system, Moodle platform, educational industry*

## **INTRODUCTION**

The transition to the informatization of society and the rapid pace of globalization affect the development and application of modern information resources in the educational process. At the same time, the current pace of development of innovative resources entails the creation of an information society, which requires the presence of qualitatively new skills and knowledge. At the same time, the active use of personal computers, cell phones (and other modern gadgets), the Internet, and social networks influences

the formation of completely new conditions for cooperation in education. The available prospects of the Internet change the basic conditions of cooperation in education in such a way that its comprehensive application leads to a pattern of transformations of the main spheres of activity. Consequently, the purpose of this article is to analyze trends in the development of information educational resources in modern conditions. Accordingly, when considering this broad topic, we will distinguish smaller tasks: to explore the possibilities of the university and other educational resources as platforms for independent learning, to conduct a SWOT analysis of the effectiveness of modern educational resources use, to predict further trends in their development.

The problem of using modern educational resources has been studied by many scientists. In particular, Aghion et al. (2021) studied key innovations in the education system, characterized current competencies. Conte et al. (2019) analyzed the peculiarities of the use of distance education learning technologies, paying special attention to the analysis of modern learning platforms. Fuad et al. (2020) characterized the peculiarities of modern higher education development, analyzed current trends in its development, and investigated the problem of using innovations in the educational environment. Dhawan (2020) characterized the features of the implementation of digitalization in the education system, investigated the problem of the functioning of educational online technologies. Bakhmat et al. (2022) studied the peculiarities of the use of modern scientometric databases in the training of highly qualified employees. Technical and informational means, providing human life both in the professional sphere and in everyday life, have become an integral part of life. The process of informatization of modern society is accompanied by significant changes in pedagogy associated with adjustments in the content of learning technologies. Vocational education institutions are responsible for turning their students into active “digital citizens”, as Kharlampovych (2021) assures, the latter, in turn, requires the professional development of teachers to provide relevant services and resources to applicants. The use of information educational resources in vocational education makes it possible to realize the individual promotion of education applicants in the educational process without disrupting the traditional group structure of classes. It is well known that practically without attention of researchers remains the dilemma of implementation and possibility of applying innovative technologies based on information educational resources in vocational educational institutions (VET institutions) in combination with generally accepted teaching and training and training methods. Tsekhmister et al. (2021) characterized the main distance education technologies in online and blended learning environments. At the same time, the theoretical analysis of a particular educational resource has received notable attention in scholarly studios. In particular, Ayoub et al. (2020) identified the distinctive features of the Coursera educational service, described the disadvantages and advantages of learning using the materials of this resource. Vasanth & Sumathi (2020) traced the positive aspects in the formation of e-courses in the Moodle system. Consequently, the problem of a comprehensive analysis of trends in the development of educational resources is poorly researched. In addition, the aspect of predicting the future functioning of these resources and services in educational activities is poorly studied.

## **METHOD**

The main empirical sources are informative materials from the researched information resources: Open Educational Resources, Coursera, Moodle, My Education Key.

The article is based on the educational resources of the world's leading universities: Open Yale Courses, Education Resources of Princeton, and Harvard Universities. However, the work is based on a thorough analysis of the practices of modern educators.

The work is built on the use of theoretical pedagogical research methods: comparison, concretization, and others. With the help of concretization, the peculiarities of using modern information resources (Open Educational Resources, Coursera, and others) are reflected. The paper uses a systematic method of research, according to which modern educational resources are treated as independent systems, consisting of many components. Separately, we used axiomatic, structural, and functional method of research. Based on the principle of comparison, we managed to compare the main information resources most popular in modern education.

Separate attention is paid to the method of SWOT analysis, which, since 1969, is actively used in various areas of scientific knowledge (Ayoub et al., 2020). The main content of the method consists in a detailed analysis of the identified factors that are significant in decision-making, it allows to formulate and characterize the prospects for the development of a process, idea, or activity. Note that originally this method was actively used in marketing studios, but nowadays it has shown its effectiveness in the educational system as well. So, since our study analyzes the main trends and tendencies in the development of education the requirement for an objective and balanced analysis is relevant.

## **RESULTS AND DISCUSSION**

### **Modern Information Resources: Problems of Using Educational Internet Portals**

Currently, the role of educational information resources in education is becoming increasingly prominent, providing general computerization of students and teachers (Downton, 2017). This in turn addresses several major challenges: 1. Providing access to the network for each participant in the educational process, and this can be implemented at different times and from any location. 2. Development of single information space of educational industries and presence in it at any time independent of other participants in the educational process. 3. Creation, development, and effective use of manageable information technologies and educational resources, as well as personal user knowledge bases of teachers and students with universal access to different activities with them.

Given the current pace of computerization in the field of continuing education, and in view of the unevenness of the technological computer or network provision of the population (especially in military settings), it can be assumed that in the near future the above tasks will not be fully resolved (Downton, 2017). However, the improvement of already available and the introduction of new educational resources will affect the solution of this problem. Meanwhile, many experts now agree that traditional methods of education are now obsolete and need some transformation or replacement by continuing education. Consequently, new forms of education are characterized by the features of interactivity and cooperation in the learning process (Conte et al., 2019). At the same time, new theories of learning (in particular, such as constructivism, student-centered learning, education without temporal and spatial boundaries, self-education, etc.) need to be developed. To improve the quality of modern education, it is supposed to actively apply new educational technologies, intensively introduce them into the educational methodology (Tsekhmister et al., 2021). Various approaches to the implementation of educational technologies are a set of ways of defining and implementing curricula and programs, which are a system of methods, forms, and means of learning to ensure the achievement of certain learning objectives. At the same time, information educational resources and technologies are associated with the means of information and computer technology. For this reason, the educational environment in which the implementation of educational information technology takes place is weighted, the components affecting its activities are determined (Howard et al., 2021). Among the latter we can distinguish: technical (means of communication, computer equipment), software and hardware (software tools to support the conducted learning technology), organizational and methodological (instructions to students and teachers, the organization of the educational process).

Currently, many informational educational resources contribute to the development and support of the educational industry (Sydoruk et al., 2022). Conventionally, they can be classified into several types: portals that collect information about educational institutions of basic or additional education, a variety of forms of distance or continuing education, resources that promote education and self-education in certain fields of knowledge (Aghion et al., 2021). Predominantly the main audience is pupils, applicants, and students.

A well-known online platform is Coursera, which hosts many courses for the self-development of today's students. The digital base of Coursera for Campus allows you to attract teachers and students from all over the world to online webinars conducted by well-known universities. On this platform, there is an opportunity to receive a certificate in case of successful completion of the selected courses. Note that during 2020, more than 65 million people were registered in the Coursera resource. Predominantly students chose those courses that contributed to their self-development or their interests. As a result of the negative impact

of the COVID-19 pandemic on the booth life, students became actively interested in psychological health resolution methods, human mental health sciences, sociological issues, etc. (Arruda et al., 2021). For example, the most popular course in 2020 was a course from Yale University called "The Science of Being Happy" (over 2.5 million people chose it). In the second city was the COVID-19: Spreading Contact course from Johns Hopkins Private Research University (about 1.5 million people chose this course). The COVID-19 pandemic had an impact on the increased demand for online learning (Arruda et al., 2021). As a result of the transformation of the labor market and the demand for retraining workers, priorities in the formation of relevant abilities and skills have also changed. In particular, in 2020 the educational resource Coursera reached 65 million users from 60 countries. Note that other courses (except psychology) are also in significant demand. First of all, we are talking about courses that help improve information and technological skills and promote business knowledge. An educational Internet portal called Open Educational Resources (OER) contains many open educational resources, which provide access to various educational materials: courses, modules, textbooks, tests, video-lectures, which are used to support access to knowledge on such subjects as: history, geography, philology, art, mathematics, social sciences, applied sciences, etc. Open Educational Resources has a separate section called a Hub - a proprietary resource center where a network of users can produce, distribute collections of their own courses, administer groups and share educational and scholarly achievements. Such Hubs can be used to bring together a group of educators, specialists in a particular industry to create, organize a learning project that can be shared with a larger audience. The goal of the Open Educational Resources Platform is to bring together today's educators in order to disseminate quality education to students. Educators can collaborate and develop interesting courses for students. Because of this, Open Educational Resources courses and programs focus on building critical thinking, leadership skills, individual development, and self-education. Open Educational Resources also offers special scholarships for educators and specialists in a particular field. Fellows have the opportunity to work together in a one-year project to share their own experiences with instructional strategies, innovative ideas, and the latest methods, paving new avenues of collaboration among educators of the world. In addition, throughout the program, fellows can organize webinars, workshops, lectures, and trainings that foster collaboration. Separately, mentoring regarding personal project work and advocacy channels is provided. Consequently, we believe that Open Educational Resources is useful for both faculty and students. The development of interesting courses contributes to the improvement of students' knowledge and skills, at the same time this platform influences the formation of cooperation between teachers from different universities.

My Education Key promotes distance education through the online distribution of video lectures by professors from the world's leading universities. There are many videos on this platform in both broad areas and narrow disciplines. This resource has an additional value: after listening to video lectures students are not given certificates or degrees.

### **University and School Educational Resources: Peculiarities of Functioning**

Educational institutions of varying degrees, as a result of the COVID-19 pandemic, have begun to create their own systems and resources with the primary goal of supporting teaching and learning during periods when teachers and students are working remotely (Arruda et al., 2021). The success and effectiveness of such systems depend on their design and management, which points to the need for high standards of instructional quality. All the ways of placing additional information to be used in the educational process on special platforms should be planned and monitored, subjected to long testing, and periodically updated. An important aspect is the protection of the data stored on the servers. The latter is necessary not only to minimize financial or informational losses but also for reputational purposes - the possibility of a hacker attack in today's information day is an extremely negative signal that can put an end to the popularity of educational institutions (Dhawan, 2020). Updating information requires permanence, in particular, if unpopular courses are identified, they should be withdrawn from access or substantially revised. Information about such work is publicly available and, according to experts, will contribute to the institution's reputation (Fuad et al., 2020).

Separately, the effectiveness of additional courses posted on the websites of leading universities should be noted. In particular, Massachusetts, Harvard, Yale, and Princeton university's offer a range of disciplines that are used for distance learning and have a strong pedagogical component. This has turned the sites of these esteemed institutions into not only introductory platforms but also places of pedagogy. Open-Yale courses are an open system of electronic courses taught by renowned teachers and researchers from Yale University. The goal of such training is to attract to the studios all those who want it. The training takes place as follows: the instructors record their lectures in the video, audio, and text formats, which are posted on the Web. At the same time for attending such training no certificates, diplomas, or qualifications are issued.

We believe that the use of educational resources in universities and other educational institutions should consider the following features: the formation of electronic courses that could interest students and be useful in the training of high category specialists, the development of special courses for continuing education, support for distance learning technologies, the formation of an organized system of support for students and teachers (See Table 1).

**TABLE 1**  
**STAGES AND PROGRAM RESULTS OF THE USE OF EDUCATIONAL RESOURCES IN EDUCATIONAL INSTITUTIONS**

<b>Features of the use of educational resources in educational institutions</b>	
<b>Stages</b>	<b>Program results</b>
Creation of electronic courses that could be of interest to students and useful in the training of qualified specialists	This will attract applicants in different specialties, so it is proposed to additionally make such academic disciplines not narrowly specialized, but broader. In the same way as for other disciplines, it is proposed to involve potential employers in the compilation of courses, as their opinion should also be taken into account in the formation of the educational process.
Forming courses for continuing education	Seniors studying remotely or by correspondence should have a selection of specialized disciplines that are useful and designed specifically for them. This selection should differ in its structure, focus, and teaching process from the traditional disciplines students take.
Expanding the communicative boundaries of the learning system Supporting students and educators	Support for appropriate distance learning or communication technologies between faculty and students Formation of a reliable and organized system of support for students, which would include anonymous evaluation of the quality of educational services, etc.

*Source: authors' own development*

One of the most popular platforms for education is Moodle (Vasanth & Sumathi, 2020). Now the capabilities of this resource are used primarily to provide distance education. At the same time, its toolkit allows you to create relevant e-learning courses, to implement effective control over their implementation. The purpose of Moodle is the formation of social constructive pedagogy based on such aspects as cooperation, knowledge through learning, formation of critical thinking, etc. This system fully implements the process of online classes but is also capable of complementing the formation of an individualized personal learning trajectory (Vasanth & Sumathi, 2020). Moodle has a software code that is simple, easy to use, efficient, and compatible with many operating systems without requiring the powerful characteristics of a digital device. Individual courses can be prepared not only for students but also for "guests", and the total number of such courses can reach thousands - the servers support Moodle as usual. The teacher

controls all course parameters, including the right of restriction for other teachers. It is possible to form weekly, thematic or social courses, disciplines whose purpose is discussion.

### Comparative Analysis of the Use of Information Resources Based on SWOT-Analysis

To identify the strengths of the use of electronic learning resources compared to traditional technology, let us determine what exactly their advantages are expressive (strengths), and where weaknesses are manifested. A particularly important factor is the possibility of using a particular educational resource regardless of time and place. In addition, the organization of such e-learning does not depend on the system of updating the material and technical equipment (as it happens in typical classrooms). At the same time, by participating in various webinars on those or other information resources, you can develop their own communication skills and expand the circle of communication with students from other educational institutions (Laufer et al., 2021). The weaknesses are the replacement of habitual communication with computer work, which creates problems with socialization in the future. Of particular importance is the limited use of e-learning due to the lack of access to the Internet. Also of particular importance is the need for student self-discipline and motivation to learn. The limitation of corporate access to individual learning resources may also be a weakness. Based on this analysis, it is also possible to identify opportunities and threats to the use of information resources in today's learning system (See Table 2).

**TABLE 2**  
**SWOT-ANALYSIS OF THE USE OF EDUCATIONAL RESOURCES**

Strengths	Weaknesses
Using the resource regardless of location and at any time.	The need for constant availability of the Internet
Lack of renovation of facilities (as may be the case at typical educational institutions)	Substitution of regular communication by computers, which may lead to socialization problems in the future
Building communication with students from different countries	The need for student self-discipline and motivation to learn
Widening of the target audience	Methodological restrictions on the freedom of instructors
Improving the competence of distance learning participants	Restrictions on corporate access to specific learning resources
<b>Opportunities</b>	<b>Threats</b>
Trend changes significantly expand the potential of educational resources	Reduced efficiency of educational activities due to the need to constantly pay for communications and Internet services.
Systematic improvement in the visualization and quality of information materials	Impairment of the prestige of the traditional educational system
Opportunities to attract external funding	Shortage of highly qualified and competitive specialists.
Lifelong learning	Restrictions on the use of certain information resources created in other states.
Wise use of natural and energy resources	

*Formed by the authors of the article*

Thus, direction S-T (application of strengths to neutralize threats) will work effectively for the first indicators of the list of threats. We are talking about a decrease in the effectiveness of educational activities due to the need to constantly pay for communications and Internet services, devaluation of the prestige of the traditional education system, lack of highly qualified and competitive specialists. At the same time, the direction of W-T (goal to prevent threats and minimize weaknesses) is relevant in the period of decision-making. As a result of the SWOT analysis, only the threat of possible political difficulties at the

international level is not manageable. This can lead to the limitation of the use of certain information resources created in other states, although it does not entail the impossibility of activity in the chosen direction (not using high-quality resources developed in other states does not negate the possibility of developing equally high-quality domestic content).

## CONCLUSIONS

Consequently, the use of educational resources is a promising direction for further development of educational processes. Based on the analysis of popular educational services (Coursera, Open Educational Resources, My Education Key, Open Yale Courses, etc.) we note that in the conditions of distance education development they are quite promising platforms for further development and use. At the same time, it is advisable to use them as an additional resource rather than the main one. Consequently, the educational resources of universities and other educational institutions have advantages, if they meet certain requirements. One of the most effective mechanisms, we believe, is the Moodle platform, which used to be used only as a supplement to a distance learning course. At the same time, such training is very often used not for obtaining diplomas or obtaining qualifications, but for self-development.

The use of modern educational resources has certain threats: reducing the effectiveness of education due to the need to constantly pay for Internet services, lack of highly qualified and competitive specialists, devaluation of traditional education, restrictions on the use of information resources created in other states (impossible to implement due to sanctions, etc.). If the first two factors are subject to adjustment, it is difficult to solve the global or external risk factors for the use of information resources. Consequently, this type of training at the moment can only be seen as an addition to the already traditional established methods.

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