DEVELOPMENT OF DIGITAL EDUCATIONAL RESOURCES IN FOREIGN COUNTRIES
(USA, Great Britain, Germany)

Samandarov Zuxriddin Raup o'g'li
Tashkent State University of Economics.
Chief Specialist of the Academic Activities Management Department
samandarovzukhriddin@gmail.com

A B S T R A C T	K E Y W O R D S
The article examines the state and development of various digital educational products and services in a number of foreign countries: USA, Great Britain, Germany. The choice of such different countries allows us to give a more complete comprehensive picture of the goals and objectives of the use of digital resources, as well as to assess their current state and ways of development. Such an analysis is relevant due to the rapidly developing global trend of digitalization of all levels of education. The article presents the results of thep study of 31 educational digital resources from the above countries, the characteristics of each resource, its opportunities, goals, objectives and target audience. In the future, during the continuation of the study, an analysis and expert assessment of all these resources will be proposed according to a number of criteria and parameters.	Education, digitalization, digital educational resources, comparative analysis..

Introduction

Digitalization is becoming one of the key global trends in the development of all levels of education. Digitalization affects not only the change in the means of teaching and the content of education, but also the form of the organization of education and the provision of the educational process. Online education is actively developing, this is a steady trend of the last decade, many authors write about it [1,3,4]. The demands of states and society to the education system in terms of the quality of training specialists in modern conditions (the information age, the era of the fourth Industrial Revolution) are also actively analyzed [2]. In connection with the processes of globalization and the development of the world educational space, constant attention is needed to the problems of digitalization of education in foreign countries, developed countries are especially indicative in this regard. At the same time, conducting a comparative analysis, it is important to characterize the situation with digital educational resources, taking into account the specifics of countries, as well as highlighting the most vivid,

creative projects in the field of digital provision of the educational process for various levels of education.

Setting goals and research methods

The purpose is to present, characterize various types of the most striking and popular digital educational resources (products, services, platforms, etc.) in a number of foreign countries (USA, Great Britain, Brazil, Germany), to show their tasks and target audience, to prepare the basis for subsequent research in order to comprehensively assess the state of these resources. In other words, the purpose of this study is to study successful international experience in the development of digital products and services for training, platforms educational content and a unified information and educational environment for teachers and schoolchildren.

Among the research methods used are the study and analysis of scientific publications, analysis of websites and platforms, the method of expert assessments, comparative analysis.

General characteristics of the use of digital educational resources in foreign countries

Among the countries that are widely introducing digital technologies into the educational process, we can single out the countries of the Asia-Pacific region — Singapore, the Republic of Korea (South Korea), Hong Kong (China), Japan,

Australia, New Zealand, Israel, Great Britain, Estonia, USA, UAE. It is important to note such a parallel: countries focused on the development and widespread implementation of digital educational resources usually demonstrate high educational results in international comparative studies of the quality of education. We will divide into groups a number of the main digital resources, platforms and technologies implemented in these countries.

A resource group that includes video discussion platforms that promote the development of oral and written language skills in students, especially children with disabilities .

The second enlarged group of digital educational resources and technologies used in the countries mentioned above includes innovative data collection methods. They open up new opportunities for assessing not only students' knowledge, but also motives, interests, hobbies, background in general, and allow realtime identification of students' academic interests and "problem areas" in their learning. The next group is transformative technologies, they are increasingly being introduced into the educational process, in particular, augmented, virtual and mixed reality. With the help of such technologies, the outside world is literally brought into the classroom. Another important aspect is that educational policy in developed countries is increasingly being built based on educational analytics.

Data analysis is becoming a new tool for transforming the education system based on the principle of personalization, to improve the efficiency of education management. Some digital resources (products and services, educational platforms) have already begun to develop in the direction of analyzing and interpreting data on education, starting from childhood and early development, to assess the future performance of schoolchildren, individual educational progress, to design optimal educational trajectories taking into account the cognitive and personal characteristics of children.

Every year, the investments of educational organizations in the implementation and use of digital products and solutions are increasing. However, their use in the educational process does not always lead to effective results. According to Thomas Jefferson Education, a non-profit organization that

brings together leaders in the American education industry, every year America's schools spend more than $13 billion on thousands of digital educational tools and products, but a growing body of research shows that 85% of spending on educational technology can be spent on tools that are not suitable for a particular school or are used incorrectly.

In this regard, representatives of the non-profit organization Thomas Jefferson Education launched the initiative "The EdTech Genome Project" to create an evidence-based database on the effectiveness and applicability of certain digital educational products in the educational activities of schools and teachers, which will help them in choosing digital solutions and products for specific goals and objectives and their effective implementation [33]. The EdTech Genome Project is a collaborative effort between over 100 educational research and advocacy organizations. To date, researchers and experts working within the framework of this initiative have identified ten factors that supposedly influence the success or failure of the implementation of digital educational technologies, solutions. These include:

− the process of choosing digital educational products.The presence of applied quality systematic processes and resources that the school uses to test and select a digital product before purchase and full implementation;

− task priority.Priority for the school administration and for teachers of the task of introducing and using digital products;

− school infrastructure and resources.Availability of the necessary infrastructure for the introduction of digital educational products, including equipment, hardware and software, the Internet, financing;

− implementation and maintenance system.The quality of the organization in educational institutions of the system for introducing digital educational products, their maintenance (including training), monitoring the use and evaluating the results of efficiency for several years after the purchase;

− professional education. Availability, frequency and quality of professional training for teachers on the use of digital products and solutions in the educational process;

− corporate culture of staff. A set of beliefs, values and developed forms of cooperation between teachers of an educational organization;

− administration support. Providing various forms of support and incentives provided by school or district administrations to teachers and staff implementing digital tools; − the role of the teaching community.The activity of teachers in solving issues of organizing the educational process, using the necessary tools, creating effective learning conditions, as well as in making decisions in the field of introducing educational digital products and tools;

− beliefs and knowledge of teachers. Teachers' beliefs in the value of digital educational products and technologies, their knowledge of pedagogical best practices for integrating technologies into the educational process and their beliefs in the effectiveness of their implementation;

According to the results of studies conducted in the Netherlands for several years and devoted to studying the effectiveness of the use of various digital products and services in the educational process, it is noted that the effectiveness of the result of their use may also depend on subject areas (for example, the use of digital products and tools in teaching mathematics and foreign languages are the most effective), the age of students, student performance (for example, digital educational products can be most effective in teaching children with low and average academic performance), the level of digital competencies of teachers and students, etc. [14].

Characteristics of foreign digital educational products and services

In the course of the study, 7 digital educational resources with striking characteristics, introduced in educational organizations of various levels of education, were studied and analyzed.

The description of each resource contains its general characteristics, goals and objectives, pedagogical, organizational and technological capabilities, as well as the target audience. In further studies, a comprehensive assessment of the state and development prospects of each resource will be given.

LearnSmart (McGraw-Hill Education, USA).

Internet address: http:// learnsmartadvantage.com/ [16].

It is an interactive learning tool that adaptively assesses students' skills and knowledge levels, as well as learning progress (what topics are mastered, which require further study and practice, etc.). The content of the training courses is adjusted depending on the dynamics of mastering the material, the "strengths and weaknesses" of the student's knowledge, the level of his confidence in this knowledge. LearnSmart's adaptive technology also takes into account the characteristics of memory in the learning process (based on the aggregation of the experience of using LearnSmart by all students since the launch of the product). Based on the accumulated experience, a pool of topics was identified that students most often forget during the semester / year, and periodically these topics are reminded to students (for consolidation and deeper study).

ALEX (McGraw-Hill Education, USA).

Internet address: https:// www.aleks.com/ [5].

An adaptive platform for individualized education using artificial intelligence technologies, developed by representatives of the American publishing house of educational literature McGraw-Hill Education. The most important feature of the platform is that this product uses artificial intelligence (AI) to track the quality of each student's learning.

ALEX "knows" at every moment on each individual topic the student has mastered the educational material. If not, the program knows if it's ready student is studying a topic at a particular point in time. This approach makes learning more efficient and effective - students have the choice of only those topics that they are ready to study right now. The training avoids multiple choice questions, instead using flexible and easy-to-use answer entry tools that mimic what would be done with paper and pencil. When a student first logs into the system, the functionality available during the training is demonstrated. The student then proceeds to the system's assessment of the initial level of knowledge: in a short period of time (about 45 minutes for most courses), a small number of questions (usually 20-30) are asked. Each subsequent question is selected based on the answers to the previous questions. Accordingly, each set of questions for assessment is unique, it is impossible to predict which questions will be asked to a particular student. After completion of testing, the student's knowledge is presented in the form of a multi-colored pie chart by assessment components.

Lehrerburo (Klett, Germany).

Internet address:https://www. lehrerbuero.de/startseite.html [17].

Lehrerburo (Teacher's Office) is one of the largest online portals for primary and secondary school teachers with access to digital teaching and reference materials. Developed by the largest publishing

house of educational literature in Germany - Klett. Includes the content of all educational materials of the holding, as well as many useful tools for work.

Features and tools of Lehrerburo (Teacher's Office): - educational materials - more than 170,000 materials (audio, video, PDF, pictures, worksheets, interactive whiteboard, etc.); − more than 3000 work manuals for teachers; − consultations (more than 2000 articles about school life with recommendations and expert opinions); − calendar (events, meetings); − school schedule; − documents (allows you to save and load personal documents); − digital communication with students and assigning homework to study groups (sending worksheets), etc. Some of the content is available for free without registration. Another part of the content is available only after registering in your personal account and paying a membership fee for access to one or more modules.

Mein Unterricht (Klett, Germany).
Internet address:https://www. meinunterricht.de [20].
MeinUnterricht (My Lesson) is an online learning materials platform for teachers to quickly prepare for classes. Also developed by Klett. The platform contains educational materials from 15 German publishers of educational literature, which are part of the Klett holding, and 5 free educational resources. The platform allows you to create and save your own collections of methodological developments. Mein Unterricht features: − more than 130,000 pages of high-quality educational materials from specialized publishers; - access to educational materials from any device connected to the Internet, whether it is a PC, laptop, tablet or digital board; - the ability to create, save and use at any time their developments in training materials; - ensuring joint work with other teachers on the development. Target audience: teachers and school administration, educators.

Revel (Pearson, UK).Internet
address:https://www.pearsonhighered.com/revel/index.html [27].
Revel is an LMS environment developed by Pearson (Great Britain), an international educational publishing house, in collaboration with educators. Integration with other independent LMS systems Moodle, Blackboard, Learn, Canvas, Brightspace is possible.

In the section of each discipline, the teacher has the opportunity to:

− post educational materials;

− control knowledge through testing;

− keep a progress log and receive student reports;

− to collect and store independent work of students;

− communicate and consult with students, etc.

What is available for teachers, students:

 - an interactive environment in which you can track the progress of homework, tests in real time, as well as make comments, make notes, reminders, etc.;

- multimedia presentation of content - the ability to integrate video, audio, links to external sources, tests

- into the content being studied;

− mobile version of Revel (application): content is available both online and offline, automatic synchronization of all versions (on a computer, tablet, mobile device);

- appointment of deadlines (manual)

- control of the development of each of the topics;
 - lesson planning for the development of the course
- students can see the entire structure of the course, forms of control;
- meaningful interaction with students - teachers have access to a statistical analysis of academic performance, information on the time spent on homework / tests, on the dynamics of academic performance (improvement / deterioration of grades).
Target audience: universities (teachers, students).

Connexus (Pearson, UK).Internet address:https://cpa. lms.pearsonconnexus.com/ [7].

Pearson Connexus is a powerful, adaptive education management system that connects teachers, content, and students online to provide personalized and flexible learning that helps improve educational outcomes. Developed by the international publishing house of educational literature Pearson (Great Britain). More than 700 online courses (for school and higher education) are available on the platform.

With Pearson Connexus, schools can:

- to ensure a continuous learning process at any time and in any place;
- provide a wide range of learning opportunities, a variety of choices for students;
− tailor learning to the needs, talents, interests and learning style of each student;
- track how students are prepared for college and future employment.

Opportunities for teachers:

 - create your own course, view it "through the eyes of students";
- add, edit and customize elements to assess the actions of students, their progress; - blogging, discussing topical issues with students;
- add your own tasks, links, attach files, videos from Youtube, polls, tests, projects, etc.; also use the content of the publisher;
 - keep a journal, fill in student diaries, manage the dynamics of the educational process.

Opportunities for students:

− complete tasks at a convenient time (before the set deadline), following the instructions (for example, attach files to Dropbox, fill in text fields, etc.);
− the platform automatically checks how technically the uploaded homework meets the requirements set by the teacher;
- apply a calendar
- it displays new tasks, deadlines, timetable;
− to see the annotation of the course, the calendar and thematic plan, progress on the course;
- use mail for communication with teachers, official correspondence;
- to plan - a list of current affairs for today / tomorrow and more.

Target audience: schools (teachers, administrative staff, students); universities (students, teachers, administrative staff).

Savvas Realize (Pearson, UK).

Internet address: https:// mysavvastraining.com/products/realize [28].

Savvas Realize is an award-winning digital adaptive learning platform for schools with over 850 Pearson-designed curriculums. It is a full-fledged LMS-system that contributes to the improvement

of educational results. This learning platform is an online space for educationally aligned content, easy-to-use classroom management tools, and integrated quizzes that help teachers deliver effective learning.

Platform features:

− access to all content in one place;

 - setting, editing and reordering of content;

 - assigning homework, grading.

In each discipline, the teacher has the opportunity to:

− post educational materials;

− control knowledge through testing;

 − keep a progress log, receive student reports;

 − to collect and store independent work of students;

 - communicate and consult with students;

− Communicate with parents through common customizable mailing lists; - share the accumulated materials with colleagues and much more.

Target audience: school (teachers, students, parents).

Conclusion

The review of international digital educational products, resources and services allows us to say the following. The industry of creating digital products for the education system regardless of the levels, it develops at a rapid pace.

In general, electronic products are more successfully created by publishing houses that have personnel to create content and develop technological approaches to learning formats.

The market for services in the field of electronic technologies, content, forms and methods of teaching is quite diverse and is focused on different categories of students, school teachers, teachers in vocational education, and parents.

 So far, at first glance, there is no tendency for companies producing such products to believe that in the future they see the replacement of traditional education within the walls of the school with online education. On the contrary, a number of companies produce content and services that can combine online and offline learning.

The coronovirus pandemic has significantly accelerated the process of developing electronic resources, increasing the audience using these resources, and also accelerated the assimilation of these resources.

In the future, with the ongoing development of technical capabilities for the use of online forms of education (availability of home computers, Internet access, etc.), the forms of online education and the content of electronic platforms will develop. Their number will increase sharply.

Some issues remain uncovered in this article, for example, the quality and effectiveness of online learning in comparison with fulltime learning, the types and forms of content offered, the comparison of online learning technologies in terms of efficiency and impact on the quality of education. Answers to such questions require a deeper study and a series of monitoring procedures. This work is ongoing and its results will be presented in subsequent materials.

References

1.Elkina I. M.Modern online and offline education from the perspective of philosophy of education // Values and meanings. 2020. No. 6 (70). pp. 9–31.

2.Ivanova S. V., Ivanov O. B.Prospects for the development of education in the conditions fourth industrial revolution // STAGE: Economic Theory, Analysis, Practice. 2019. No. 6. P. 7–30.

3.Robert I. W.Digital transformation of education: challenges and opportunities sti improvement // Informatization of education and science. 2020. No. 3(47). pp. 3– 16.

4.Sorina G. V., Rikel A. M."Online involuntarily": involvement and responsibility ness // Vocational education in the modern world. 2021. Volume 11. No. 1, p. 214–226.

5. ALEX [Electronic resource]. URL: https://www.aleks.com/ (Accessed: 08/29/2021).

6. Blackboard [Electronic resource]. URL: https://www.blackboard.com/ (date accessed: 29.08.2021).

7. Connexus [Electronic resource]. URL: https://cpa.lms.pearsonconnexus. com/ (date of access: 08/29/2021).

8. Duolingo [Electronic resource]. URL: https://ru.duolingo.com/(date 29.08.2021).

9. E-docente [Electronic resource]. URL: https://www.edocente.com.br/ (date accessed: 29.08.2021).

10. Edsby [Electronic resource]. URL: https://www.edsby.com/ (date accessed) niya: 29.08.2021).

11.FreedomFlix [Electronic resource]. URL: https://www.scholastic.com/digital/ freedomflix.htm (accessed 08/29/2021).

12.Gradpoint [Electronic resource]. URL: https://www.pearson.com/us/prek-12/ products-services-teaching/online-blended-learning-solutions/gradpoint.html (accessed 08/29/2021).

13.Illuminate Education [Electronic resource]. URL: https://www.illuminateed. com/?io=1 (date of access: 08/29/2021).

14. Haelermans Carla. "Digital tools in Education", 2017.

15. Khan Academy [Electronic resource]. URL: https://ru.khanacademy.org/ (date of access: 29.08.2021).

16. LearnSmart [Electronic resource]. URL: http://learnsmartadvantage.com/ (date of access: 29.08.2021).

17. Lehrerburo [Electronic resource]. URL: https://www.lehrerbuero.de/ starteite.html (accessed 08/29/2021).

18. Math Solutions [Electronic resource]. URL: https://mathsolutions.com/(date accessed: 29.08.2021).

19. McGraw-Hill Create [Electronic resource]. URL: http://create.mheducation. com/createonline/index.html, https://www.mheducation.com/highered/learningsolutions/create.html (accessed 08/29/2021).

20. Mein Unterricht [Electronic resource]. URL: https://www.meinunterricht.de/ (date of access: 29.08.2021).

21. PAR Platforma Educational [Electronic resource]. URL: https://www. somospar.com.br/ (date of access: 29.08.2021).

22. Plurall [Electronic resource]. URL: https://www.plurall.net/ (date accessed niya: 29.08.2021).

23. PROFS [Electronic resource]. URL: https://www.profseducacao.com.br/ (date of access: 29.08.2021).

24. Quizlet [Electronic resource]. URL: https://quizlet.com/en (date of access: 08/29/2021).

25. RAAbits [Electronic resource]. URL: Internet: https://www.raabe.de/, https://www.raabits.de/ (date of access: 29.08.2021).

26. Red Bird [Electronic resource]. URL: https://www.mheducation.com/prek-12/ explore/redbird.html (accessed 08/29/2021).

27. Revel [Electronic resource] URL: https://www.pearsonhighered.com/revel/ index.html (date of access: 08/29/2021).

28. Savvas Realize [Electronic resource]. URL: https://mysavvastraining.com/ products/realize (date of access: 08/29/2021).