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Media Educational Potential of Open Practices in the Context of Digitalization Of the University Environment

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Abstract

Digital transformation of higher education emphasizes the implementation of open educational resources and practices as a key mechanism to increase knowledge accessibility and develop flexible, personalized educational pathways. This article analyzes the media pedagogical potential of open educational practices in the context of the digitalization of the university environment. The article examines the integration of open educational resources and practices into the digital environment of a technical university using the example of the Karaganda Technical University named after Abylkas Saginov. The aim of the study is to determine the level of use of open educational resources and practices at the technical university, identify the motivational factors and barriers to their application, and determine the contribution of open educational resources to the development of students' media and digital competencies. The methodology includes an analysis of international regulatory documents and scientific publications, a study of the university's digital infrastructure, and a questionnaire. The results demonstrate high student and faculty engagement in using open educational resources, along with differences in their motivations. Key barriers to the systemic integration of open educational practices include insufficient digital training of teachers, time constraints, language difficulties, and the lack of comprehensive institutional support. Open practices have been found to promote critical thinking, digital autonomy, media literacy, the development of individual educational trajectories, and the expansion of international academic interactions. This study concludes that a unified university digital development strategy is needed, encompassing regulatory frameworks, infrastructure modernization, faculty development, and expanded international academic collaboration, for transition from fragmented use of open educational resources to a holistic open education model.

Keywords: open educational practices, open educational resources, digitalization of education, higher education, digital transformation, personalized learning.

1. Introduction

The digital transformation of education is radically changing the ways in which knowledge is created, disseminated, and perceived, shaping new parameters for the educational reality of technical universities. With the rapid development of digital communications and media tools, open educational resources and practices (OER/OEP) are becoming especially important, becoming a crucial mechanism for expanding access to knowledge and creating flexible, personalized educational pathways. As UNESCO strategic documents emphasize, the integration of

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open resources and pedagogical practices serves as the foundation for the sustainable development of educational systems, strengthening the innovative potential of universities (UNESCO, 2019).

In the contemporary media education context, open practices are viewed not only as a way to improve accessibility but also as a tool for developing digital literacy, critical thinking, and creative participation among students. The European Commission notes that open practices promote inclusion, support intercultural interaction, and create conditions for students to participate widely in academic communication (OECD, 2020). In this context, universities increasingly function as open digital ecosystems where knowledge is created, processed, and circulated in collaborative media formats.

The OEP conceptual model expect a shift from the transmission of ready-made information to collaborative, networked content development. This approach is based on the ideas connectivism, emphasizing the importance of collaboration, media cooperation, and learners' digital autonomy. The theory of connectivism rests on the idea that learning and knowledge rests in diversity of opinions. The more diverse the sources and opinions you can connect, the richer and more complete your understanding will be. Knowledge is not a single, static point of view, it isn't stored only in the human mind. Learning is the ability to access and utilize external knowledge sources. And the capacity to know more is more critical than what is currently known (Siemens, 2005). The theory of connectivism provides a powerful framework for understanding and designing learning in the 21st century, emphasizing digital literacy, critical thinking, network formation, and lifelong learning as essential skills (Dunaway, 2011). This requires a rethinking of the role of the teacher. The teacher is not just a knowledge carrier, he/she becomes a moderator of the open educational environment, a person engaged into the development of the media competence of students (Fedorov, 2008).

Despite the international attention paid to OER/OEP, there is a lack of research in the scientific literature on their integration specifically into the digital infrastructure of technical universities. Implementation is often limited to the fragmented use of individual resources, which prevents them from realizing their strategic potential and developing a holistic model of open education (Wiley, Hilton, 2018). Additional barriers include insufficient digital training for teachers, motivational difficulties, and legal issues related to licensing and intellectual property protection (Inamorato dos Santos et al., 2019).

Nevertheless, the digital educational environment is creating new conditions for scaling open education. The development of cloud services, collaboration platforms, artificial intelligence tools, and learning analytics is the basis for the deep integration of open models into the educational process. As the OECD notes, such tools promote a culture of openness, continuous professional development, and media literacy among educational participants (OECD, 2020).

This article examines the integration of open educational resources and practices into the digital reality of a technical university. It analyzes current approaches to OER/OEP, defines their role in transforming the educational environment, and identifies key barriers and prospects for their implementation. Particular attention is paid to the specifics of the digital infrastructure of a technical university and the potential for its development to support open educational models.

2. Materials and methods

This study, devoted to the integration of open educational resources and practices into the digital environment of a technical university, is conducted at the Abylkas Saginov Karaganda Technical University. It has an applied nature. In accordance with the study's objective, a methodological framework has been developed, including an analysis of scientific sources, a study of the university's digital infrastructure, and an empirical study among faculty and students in engineering programs. Taken together, these methods provide a comprehensive understanding of the status and prospects for implementing OER/OEP in the educational environment of a technical university.

First and foremost, the study is based on a theoretical and analytical approach, focused on studying key international documents (UNESCO OER Recommendation, OpenEdu Framework), international and domestic research in the fields of open education, digital pedagogy, and media education technologies. This approach allows us to define the conceptual framework of the study and refine the conceptual framework associated with OER and OEP.

To obtain a true picture of the use of open educational resources, a sample of 60 university teachers and 150 students in engineering programs have been recruited. Questionnaires for faculty have been designed to identify the frequency of OER use and the nature of OEP integration into the

educational process, their motivations for using open resources (high-quality content updates, access to relevant materials, international practices, etc.), and challenges hindering the use of OER/OEP (lack of digital skills, time, regulatory issues).

Students, in turn, were asked questions about their experience with open educational resources and the most popular types (video lectures, online courses, digital libraries, etc.), the impact of OER on the quality of material acquisition, individual learning trajectories, and existing challenges (language barriers, search difficulties, time constraints).

To systematize the information obtained, descriptive statistics, data visualization (diagrams, comparative graphs), and qualitative content analysis of respondents' open-ended responses have been used. Comparison of data about university teachers and student allow us to identify characteristic trends, the degree of digital maturity of educational participants, and the factors determining the success of OER/OEP integration.

3. Discussion

The current digital transformation of education has highlighted the search for new pedagogical models that go beyond the simple use of electronic resources. In this context, the concept of Open Educational Practices (OEP) emerged in the early 2000s as a result of the development of the concept of Open Educational Resources (OER). According to UNESCO, OER are "digital materials available for free use, adaptation, and dissemination" (OECD, 2020).

A key challenge in modernizing higher education is the insufficient adoption of open education technology. To address this and ensure high-quality specialist training, institutions must investigate improvements to both their educational content and their open education frameworks (Hurzhii et al., 2021).

Unlike OER, which primarily represent educational content, OEP emphasizes pedagogical approaches that engage students in the collaborative development of the content and revision of educational materials, thereby fostering critical thinking, creativity, and autonomy.

As G. Geser notes, OEP should be viewed not only as the free distribution of resources, but also as the implementation of innovative learning models focused on openness, collaboration, and the development of professional competencies (Geser, 2012). This idea has been consistently developed in the European context, which emphasizes that it is the practice of using and developing open materials that allows for the transformation of the traditional higher education system (Dzhurynskyi et al., 2023; Wiley, Hilton 2018).

Open education is considered an effective approach for mitigating barriers to education caused by social, cultural, and economic disparities (Bali, 2020; Peters, Britez, 2009).

In turn, Kazakhstan supports the global trend of open education, which is still in its infancy. B. Satayev emphasizes that "openness in education is associated with expanding access, reducing barriers, and introducing electronic educational resources and platforms (Sataev, 2019). One form of open education is the integration of MOOCs into education to enhance the development of students' self-study skills and digital autonomy, provide the conditions for collaborative learning and effective interaction (Dokuchaeva et al., 2025).

The results of the contemporary research demonstrate that open educational practices are becoming a key element of the digital transformation of higher education, reflecting the shift from the simple use of digital resources to the formation of a new pedagogical paradigm (Clinton-Lisell et al, 2023; Gálik, 2020; Gálik, Oprala, 2021; Kačinová, 2019; Tillinghast et al, 2020; Vrabec, Bôtošová, 2020).

The integration of OEPs into the university environment enhances academic opportunities, develops critical thinking skills, and promotes collaboration between faculty and students (Dokuchayeva et al., 2024). In such a context, university teachers increasingly act not only as knowledge transmitters but also as facilitators of educational interactions, while students become active participants and co-authors of educational content. Consequently, the digital transformation of higher education is acquiring not only a technological but also a value-based and humanistic character, based on the principles of openness, co-creation, and academic exchange. A similar position is taken by B. O. Satayev, who views open education as a means of ensuring equal access to knowledge, developing independent learning, and developing intercultural competence of students (Sataev, 2019).

However, for OER to be widely adopted, targeted efforts by educational institutions to remove barriers and increase university teachers motivation are needed. The main obstacles

include a lack of time to search for and adapt materials, issues with their quality and compliance with the curriculum, and technical difficulties. A lack of remuneration and institutional support also demotivates faculty (Belikov, Bodily, 2016).

4. Results

The results of the study provide a comprehensive overview of the integration of open educational resources and open educational practices in the digital environment of a technical university and identify key factors determining the dynamics of this process. An analysis of empirical data, compared with the characteristics of the digital infrastructure of the Karaganda Technical University named after Abylkas Saginov, has revealed that the use of open resources is gradually becoming a sustainable component of the educational ecosystem, but remains dependent on the level of digital maturity and institutional support.

First of all, the results of the questionary demonstrate a high level of engagement in the use of open educational resources among both university teachers and students (Table 1). The majority of teachers (67 %) regularly incorporate OER into their curriculum, indicating an understanding of the benefits of open materials, such as accessibility, flexible updating, a variety of information presentation formats, and the ability to integrate them with their own methodological developments. However, some teachers (23 %) use OER occasionally which may be due to differences in workload, limited time for class preparation, or insufficient familiarity with digital tools. A small proportion of respondents (10 %) have not use open resources yet, highlighting the need for targeted efforts to improve teachers' motivation and digital professional competence. Following A. Fedorov, (Fedorov, 2008) we consider the notion “professional media competence” of a university teacher as a combination of special skills to conduct educational activities. Among these skills are motivational, technological, operational, and creative ones.

Table 1. Frequency of use of open educational resources by university teachers and students

Frequency of use of OER	University teachers (%)	Students (%)
Regular use	67 % – systematic introduction of OER into the educational process; awareness of the benefits of accessibility, multimedia, and relevance of resources	74 % – systematic use of OER to prepare for classes, complete projects, and expand knowledge; demonstration of high digital competence
Occasional use	23 % – use of OER depends on the workload and level of proficiency in digital tools; application of OER when necessary	17 % – use of OER when necessary, most often to complete individual learning tasks or search for reference materials
Non-use	10 % – lack of experience is due to lack of time, digital skills, or low motivation to use open-source materials	9 % – lack of need, skills or time constraints

Among students, the result is even more illustrative: 74 % of students systematically use OER in their academic and independent work, indicating a strong need for additional information sources, which students actively use to prepare for classes, complete projects, and achieve academic success. Seventeen percent of respondents report periodic access to open sources, while only 9 % do not use them at all. This high student engagement demonstrates their digital preparedness, ability to find and interpret information, and focus on independent media search strategies. These data are consistent with current research on the media education activities of students majoring in technical fields.

Equally important are the identified motivational factors, which demonstrate differences in the perception of the role of open resources between university teachers and students.

For teachers, the primary motivation is the desire to improve the quality of the educational process: 52 % of respondents cited this incentive. This reflects the need for up-to-date materials that allow them to adapt course content to the rapidly changing demands of the digital economy. Nearly 38 % of teachers value access to modern knowledge sources, which is especially important

for engineering programs, where scientific and technical information quickly becomes outdated. The use of multimedia formats (30 %) is also significant, helping to enliven the learning process and increase student engagement. About a third of teachers view open resources as an opportunity to participate in international digital projects, confirming a growing focus on academic mobility. The innovative nature of OER is also perceived positively: 26 % of teachers note them as a tool for implementation of new pedagogical methods and practices, as reflected in Figure 1.

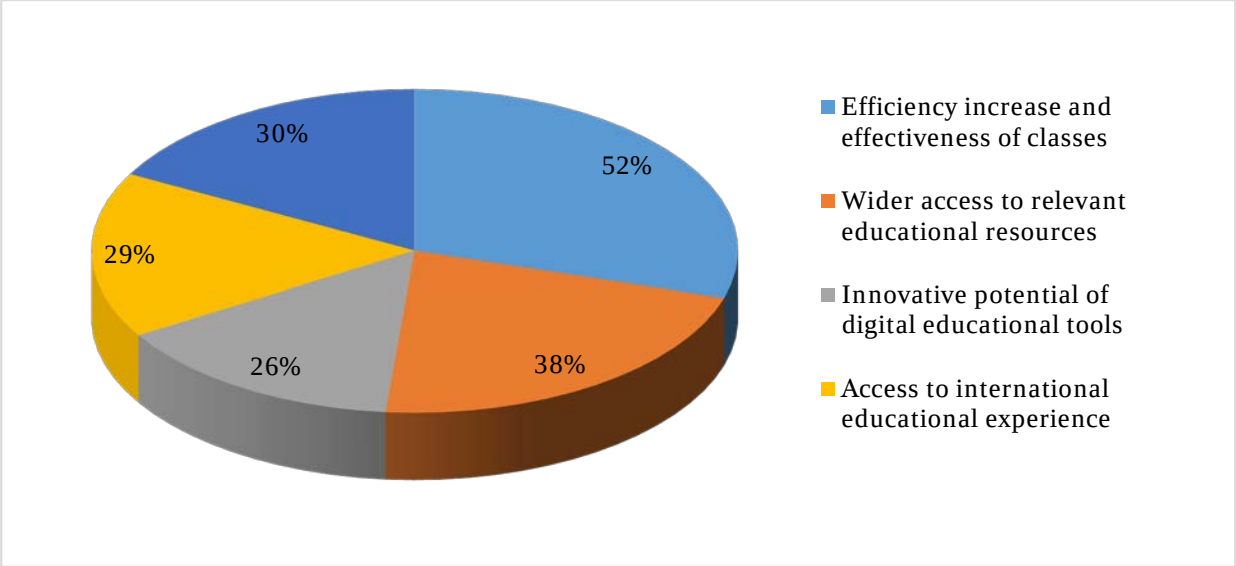

Fig. 1. Factors motivating teachers to use OER

Students characterize their own motivation somewhat differently. They prioritize improved learning (59 %) and access to additional, alternative sources of information (48 %). These figures confirm that students view OER not simply as a supplementary tool, but as a space for expanded learning, allowing them to deepen their knowledge and compare different approaches to topics. Flexibility in individual learning pace is noted by 41 % of students, highlighting the demand for personalized education models. Around 25 % of students cite the importance of the international experience they gain through open platforms, including MOOCs. Multimedia formats attract 24 % of students, reflecting their focus on visual and interactive methods of information acquisition (Figure 2).

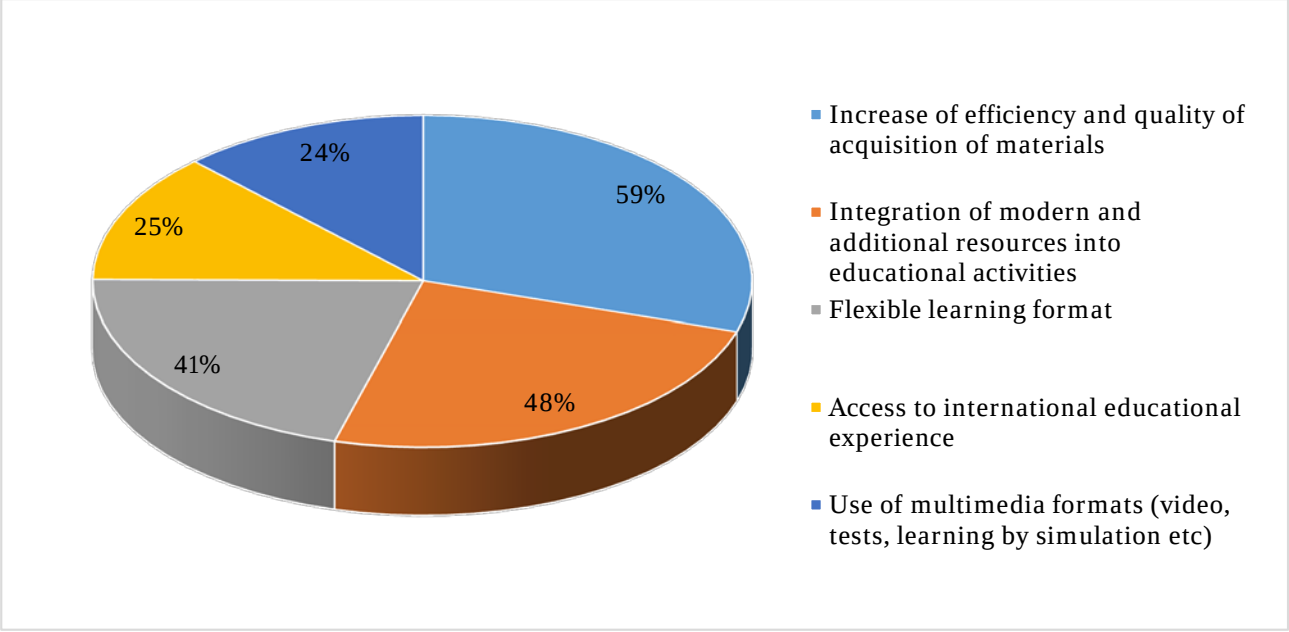

Fig. 2. Factors motivating students to use OER

Despite significant positive results, the study also identified a number of barriers hindering the scale and quality of integrating open source practices into the educational process. Among university teachers, the most common obstacles include insufficient digital training, lack of time to search for and adapt resources, a lack of systematic institutional support for developing their own OER, and legal and licensing restrictions. Language barriers remain significant when working with international platforms and English-language materials, requiring additional attention when planning digital educational initiatives. For students, barriers also include language difficulties, the difficulty of finding high-quality open source materials, and time constraints, which is particularly relevant given the high workload of engineering majors.

Perceptions of the university's digital transformation deserve special attention. An analysis of respondents' responses shows that the majority (62 %) rate the university's digital transformation as moderate. This indicates the presence of a functional digital infrastructure – distance learning systems, digital libraries, and cloud-based collaboration platforms – but also points to the need for further integration at the institutional level. About 25 % of respondents note a high level of digitalization, emphasizing the convenience of accessible online services, electronic journals, and digital platforms. However, 13 % believe that digital transformation is in its early stages and requires comprehensive efforts to modernize the technical infrastructure and improve staff skills.

A comparison of data about university teachers and student suggests that the university is highly prepared to actively implement open educational practices, but further development in this area requires targeted institutional measures. Respondents agree that OER/OEP integration should be implemented within the framework of a unified digital development strategy, encompassing a regulatory framework, incentive mechanisms, and systemic support for teachers. University teachers emphasize the need for advanced training in digital pedagogy and copyright, while students emphasize the importance of expanding access to modern digital platforms and international online projects.

Summarizing the results obtained, it is possible to conclude that open educational resources and practices possess significant transformative potential for the technical higher education system. Their integration contributes to improved quality of education, the development of digital and media educational competencies, enhanced academic mobility, the expansion of individual educational paths, and the development of a culture of open knowledge. However, the transition from fragmented use of OER to a systemic model of open education is only possible with institutional support, a developed digital infrastructure, and a sustainable educational policy focused on openness, collaboration, and innovation.

5. Conclusion

The study allowed us, first and foremost, to comprehensively assess the media potential of open educational practices in the context of the digital transformation of higher education and, moreover, to identify the factors determining the successful implementation of these practices in the university environment. Overall, the analysis of empirical data has shown that both university teachers and students demonstrate a high level of readiness to use OER/OEP and, accordingly, recognize their benefits in improving the quality of education, expanding access to modern digital resources, and shaping individual educational paths.

It is important to emphasize that educators view open resources as a tool for improving the quality of teaching and updating educational content in line with the dynamics of scientific and technological progress, while students emphasize the convenience of independent learning, flexible pace, access to international experience, and expansion of subject matter beyond traditional courses.

At the same time, the identified challenges – namely, a lack of digital competencies, language difficulties, a lack of systemic support for OER development, and insufficient regulatory frameworks – significantly limit the potential for transitioning from the occasional use of open resources to a sustainable digital education model.

The authors note that, from a theoretical perspective, the study clarifies the concept of open educational practices as a pedagogical model focused on openness, collaboration, media cooperation, and the co-creation of educational content. Furthermore, a practically significant result of the study was the development of recommendations for the strategic development of OEPs in universities, including the need for institutional open education policies, the modernization of digital infrastructure, the creation of conditions for university teachers development, and the strengthening of international academic cooperation.

Thus, open educational practices demonstrate high transformational potential and can serve as a key tool for the digital modernization of technical universities. Consequently, their further development requires systemic support, a regulatory framework, and the targeted development of a culture of open knowledge, which will ultimately ensure a sustainable transition to a modern media-oriented model of higher education.

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