

DIGITAL TRANSFORMATION IN OPEN EDUCATION MEETING THE PEOPLE'S DEMANDS FOR LIFETIME LEARNING

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Abstract: *Based on the proposal for a unified understanding of fundamental concepts and a comparison with the current state of digital transformation (DT) in open education (OE) worldwide, this article reveals a substantial gap. On one side, there is a strong emphasis on ambitious goals for open education and lifelong learning, while on the other side, a national policy framework for digital transformation in open education is conspicuously absent. To formulate practical policies within a specific national context, it is crucial to fully identify various gaps, with the most critical ones being the disparities between the current state and desired objectives, digital infrastructure, digital foundations, digital capabilities, and digital divides among regions, rural and urban areas, and different population segments. Consequently, instead of a broadly distributed policy framework, which has been customary for so long, the primary focus should be on creating and effectively implementing priority policies to narrow these gaps.*

Keywords: *open education; digital transformation; higher education; lifelong learning; open educational resources.*

I. Introduction

In Decision 1373 dated July 30, 2021, approved by the Prime Minister of the Government of Vietnam, the overarching goal is defined as follows: "Continuing and effecting fundamental changes in building a learning society to ensure that by 2030, all citizens have equal

opportunities to access an open, diverse, flexible, interconnected, and modern education system with multiple models, methods, and training levels, contributing to the robust development of human resources, especially high-quality human resources that meet the requirements of the Fourth Industrial Revolution and international integration."

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This goal is consistent with National Qualifications Framework (NQF) 29, which pertains to the comprehensive reform of education in Vietnam. As per this framework, establishing an open education system is a crucial step toward building a learning society that meets the lifelong learning needs of the people. One of the tasks and solutions to achieve this goal is to “promote digital transformation and the application of information technology in organizing lifelong learning activities.”

To create a legal framework for the task of accelerating digital transformation, the Prime Minister of the Government issued Decision 131 on January 25, 2022, approving the project “Enhancing the Application of Information Technology and Digital Transformation in Education and Training from 2022 to 2025, with a vision toward 2030.” The general objective of this project is to “leverage technological advancements to promote innovation in teaching and learning, improve the quality and accessibility of education, and enhance education management efficiency; build an open education system based on digital platforms, contributing to the development of e-government, the digital economy, and the digital society.”

Thus, we now have a legal basis for implementing digital transformation in open education to meet the lifelong learning needs of the people. However, there has not yet been an in-depth analysis and clarification of fundamental concepts, the current state, and the gaps that need to be addressed to truly integrate the legal foundations into practical implementation.

This article aims to apply a comparative education approach, comparing and contrasting recommendations and lessons from around the world with the Vietnamese context to contribute to the in-depth analysis mentioned above, albeit within the scope of higher education.

II. Some standardized concepts

The below concepts have been repeatedly mentioned in our country’s educational legal documents. However, these concepts have not yet had an official definition to serve as a basis for unified understanding and action. Given the diversity of definitions from various international approaches to these concepts, it is crucial to identify the differences in understanding in the implementation process.

The following concepts are defined from a practical standpoint (operational definition) based on reference to relevant international literature:

Regarding the concept of open education: In the report “Open Education: A Framework for Higher Education Institutions” (Inamorato dos Santos et al., 2016), the authors researched open education from various perspectives and proposed the following practical definition: “Open education is understood as an educational approach, often using digital technology. Its purpose is to expand access and participation for everyone by removing barriers, making learning accessible, diverse, customizable, and rich in content to meet individual needs. It provides various teaching and learning methods, creates and shares knowledge.

It also offers multiple pathways to formal and informal education, connecting both.” This definition clarifies the following three characteristics of open education: 1) Its purpose is to expand access, meet lifelong learning needs, and ensure the successful participation of everyone in education; 2) The solution involves removing barriers; 3) The primary means today are digital technologies. This represents a new development phase of open education in the current period, linked to the requirements for promoting lifelong learning, building a learning society, and advancements in science and technology to meet those demands.

About digital transformation in education: There are various definitions of digital transformation in general and digital transformation in education in particular. In general, digital transformation in education can be understood as a comprehensive process in which all educational organizations and activities are based on digital technology. However, for a practical definition, this article uses the following definition by Brooks & McCormack (2020). Digital transformation in education is a three-stage, interconnected process. The first is digitization, which involves digitizing data, documents, assets, and humans, especially digitizing teaching materials to create digital educational content. The second is digitalization, which means digitizing processes to transform education activities from direct and in-person to automated and online. Only then can we have the third stage – digital transformation, which is a comprehensive transformation in all three areas - culture,

people, and technology - to create a breakthrough in the organization and operation of education with the goal of improving access, quality, efficiency, and social equity in education.

III. Overview of digital transformation in open education

3.1. Current status of digital transformation in education

Applying the understanding of digital transformation in education as described above to the practical implementation of digital transformation in higher education institutions, these institutions can be classified into the following stages: 1) No idea: Institutions that have not yet initiated any digital transformation efforts; 2) Desire for digital transformation: Institutions that express a desire to undergo digital transformation. 3) Designing digital transformation: Institutions that are in the process of planning and designing their digital transformation initiatives. 4) Implementing digital transformation: Institutions that are actively carrying out digital transformation initiatives. 5) Expanding the scope of digital transformation: Institutions that have successfully implemented digital transformation and are expanding its reach. 6) Reaping the benefits of digital transformation: Institutions that have achieved tangible results from their digital transformation efforts. A 2018 survey by Gartner across 98 countries revealed the following percentages of higher education institutions in each stage: Stage 1 - 11%, Stage 2 - 23%, Stage 3 - 27%, Stage 4 - 24%, Stage 5 - 13%, Stage 6 - 2% (Clark, 2018).

As of now, even though the COVID-19 pandemic has significantly accelerated digital transformation, the impact of digital transformation has primarily been concentrated in the areas of administration, management, teaching, and learning. Key manifestations include the deployment of Learning Management Systems (LMS), online education, open education, and open science. An OECD report (2019) on digital transformation noted: “The emergence of MOOC platforms, open education, and open science, along with new digital teaching methods, coupled with the development of new technology infrastructure, are all developments that have been and are changing the practices and processes through which higher education institutions fulfill their core missions.”

3.2. Dimensions of digital transformation in OE

So, on the international stage, digital transformation in open education is currently a crucial component of the overall digital transformation in higher education. This is reflected in the six dimensions of digital transformation related to what is opened in open education, as follows (Inamorato dos Santos et al., 2016):

- **Access:** Openness is technology-driven, creating flexible learning pathways, removing economic, temporal, geographical, and instructional barriers for learners.

- **Content:** Openness pertains to Open Educational Resources (OER), Massive Open Online Courses (MOOCs), and openly accessible scientific research results that everyone can access and use freely.

- **Pedagogy:** Openness relates to the use of open educational practices (OEP) and digital technologies to expand pedagogical access in teaching, engage learners, and foster collaboration, making lessons more transparent, learner-friendly, and effective.

- **Recognition:** Openness pertains to the use of digital technology in assessing and recognizing learners’ educational outcomes in open education to ensure the connection between formal and informal education.

- **Collaboration:** Openness involves establishing digital networks, OER communities, MOOCs, and connecting individuals with educational institutions to promote resource exchange, methods, experiences, and ideas aimed at removing educational barriers and enhancing educational quality.

- **Research:** Openness involves using digital technology to eliminate barriers to accessing research data and results, thus expanding participation in research.

In addition to the six dimensions mentioned above, there are four dimensions related to how openness is implemented in open education:

- **Strategic Dimension:** This involves identifying values, objectives, opportunities, resources, and capabilities in building an open education system.

- **Technological Dimension:** This includes the necessary technological infrastructure and software required to implement open education in each of its core dimensions.

- **Quality Dimension:** Ensuring adherence to quality standards in open education as specified.

- **Leadership Dimension:** It involves a transparent approach both top-down and bottom-up aimed at leveraging activities and initiatives for a sustainable open education system.

These dimensions create a reference framework that helps stakeholders at the macro level (national), meso level (higher education institutions), and micro level (faculty, students) gain a more comprehensive understanding of open education. It aids in identifying areas that need to be opened, the extent of openness, and how it should be done, depending on the specific context and conditions of educational development.

3.3. International experience of digital transformation in OE

To have an internationally comparable view from many perspectives on the digital transformation in OE, the Center for Open Education Research (COER) has developed a research project to answer the questions the following topics at three macro, meso and micro levels, in which OER is chosen as a representative component for OE:

To provide an internationally comparative perspective from various angles on the digital transformation process in open education, the Center for Open Education Research (COER) has undertaken a research project to address the following issues at three levels: macro, meso, and micro, with OER selected as a representative component of open education:

- *At the macro level*, there are issues related to national policies and the framework for national or inter-university infrastructure for OER.

- *At the meso level*, there are issues related to the supply of OER in higher education institutions, including technical infrastructure and support, staff development, and quality assurance.

- *At the micro level*, there are issues related to the creation and use of OER in teaching and learning, as well as the sharing of OER among faculty.

From the research findings, several lessons can be drawn (Peter et al., 2022):

Digital transformation in open education requires coordination at all three levels: macro, meso, and micro. National policies and financial resources at the macro level have a decisive impact on the development of strategies, policies, and infrastructure at the meso level (higher education institutions). These factors, in turn, influence the micro level, especially in terms of individual motivation among educators and the quality of education. However, how this coordination takes place largely depends on the political, economic, and social context of each country (Figure 1).

In general, the effectiveness of digital transformation in open education is realized in countries with strong government support and top-down coordination across the entire system. In addition to this, there is a need for bottom-up coordination at higher education institutions to promote various forms of support and professional development, along with coherent policies and mechanisms aligned with the macro

level. Furthermore, results at the micro level clearly demonstrate that to motivate and empower educators in open education development, there is still much work to be done in all countries for various reasons, such as a lack of necessary incentives, insufficient or inadequate support, insufficient professional development, and concerns related to copyright issues.

- *At the macro level:* Countries with centralized university systems, such as China, Japan, and South Korea, all have national strategies or plans for digital transformation along with the establishment of national or inter-university infrastructures for OER and MOOCs. Regarding financial resources, these countries have national financial strategies or initiatives for digital transformation in education in general and open education in particular. Concerning quality aspects, these countries generally view this as an issue to be addressed by higher education institutions and faculty, and there are no national quality frameworks or standards for open education programs, including OER and MOOCs, but rather guidance documents on quality assurance for open education programs, materials, and courses.

- *At the meso level:* A common feature is that major universities in every country have their own infrastructure for open education (OER, OCW, MOOCs), especially OER repositories. In addition, China and South Korea are two countries that place great importance on developing common infrastructure to promote collaboration between universities, research institutes, and businesses. Another difference lies in the management

of quality and university policies. For centralized management systems, exemplified by China, since digital transformation in education is a national strategy, all higher education institutions have corresponding action plans aligned with the national digital transformation strategy. There are dedicated departments or offices responsible for digital transformation, focusing on management, quality assurance, and support services, as well as the development and production of digital educational resources, including OER, MOOCs, SPOCs, open video lectures, and online courses assessed by the state. In other countries, policies at the institutional level regarding digital transformation in open education are mostly developed from the bottom-up, in the spirit of enhancing university autonomy. To implement policies, major universities in various countries typically establish task forces or units responsible for developing and implementing digital transformation in open education, including the development and production of OER, MOOCs, learning platforms, and various licenses.

- *At the micro level:* OER tools commonly used by educators are video creation tools and presentation software. Understanding and using OER repositories vary, but in general, the challenges faced by educators regarding OER infrastructure include lack of knowledge, limited use, limited compatibility, and inadequacy in meeting professional requirements. Concerning quality, many educators perceive OER as having lower quality or as lacking quality assurance because there is no common perception of OER quality,

and many countries lack a quality assurance framework for OER. In terms of policies, educators in many countries believe that there is a lack of university policies on OER. In countries where universities have policies on OER, such as South Korea and China, educators suggest improvements to create incentives for educators. Overall, in addition to issues related to awareness and capacity, there are various factors that influence educators' motivation to create, use, adapt, remix, and share OER. These factors include cost-benefit considerations, job stability, time constraints, copyright issues, perceptions of OER, and attitudes related to sharing OER.

IV. Status of junior digital transformation in vietnamese open education

There have been numerous workshops and articles on open education and digital transformation in education. However, aside from the 2019 survey on the status of OER in Vietnamese universities (Do Van Hung et al., 2019) and the 2022 survey on the readiness for digital transformation in Vietnamese universities (Pitt et al., 2022), we have not had any significant surveys regarding the current state of digital transformation in Vietnamese higher education in general and open education in particular. Therefore, in the following section, the assessment of the state of digital transformation in open education at Vietnamese universities will primarily involve a qualitative evaluation based on the retrieval of relevant documents and research materials for comparison with the situation in some countries around the world at all three levels: macro, meso, and micro.

4.1. At the macro level

- *Strengths*: In terms of guidelines and policies, we have a complete and up-to-date system on digital transformation in education. Especially, Decision No 131 dated January 25, 2022 of the Prime Minister approving the project "Strengthening the application of IT and digital transformation in education and training in the period of 2022-2025, with orientation to 2030" is aiming for a college in the education sector on 6 dimensions of digital infrastructure; digital transformation ecosystem in teaching, learning, testing, evaluation and scientific research; education management information system; digital capacity training and fostering; power; policy mechanisms. Then, in Decision No 411 dated March 31, 2022 of the Prime Minister approving the National Strategy for Digital Economy and Digital Society Development to 2025, with orientation to 2030, the Ministry of Education and Training was assigned the task of building, submit for approval, and organize the implementation of strategies, plans for digital transformation, roadmap to digitize and intelligentize the field of education and training infrastructure.

Regarding digital transformation in OE, Decision No 131 stipulates in the general goal of "building an adaptive OE platform on a digital platform", however, the specific goal only focuses on online education in general, with targets on online education access to online education, online teaching and learning platform, national online resource repository, online training programs. The development and application of the platform that provides

MOOCs is mentioned as a solution. The National Strategy for Development of the Digital Economy and Society to 2025, with a Vision to 2030, according to Decision No 411, sets out the following targets: Ratio of universities, colleges, and vocational education institutions complete the digital governance model, digital operations, standardize digital data, and open digital data warehouses to reach 80% by 2025 and 100% by 2030. Regarding national digital platforms serving digital transformation in OE, according to Decision No 186 dated February 11, 2022 of the Ministry of Information and Communications, there will be an online teaching platform (as an open, equal playground, stimulating creativity, developing Vietnam's EdTech ecosystem) managed by the Ministry of Education and Training, and the MOOC platform on digital skills managed by the Ministry of Information and Communications.

Regarding infrastructure, the Ministry of Education and Training has built & developed a shared digital data warehouse (digital Vietnamese knowledge system) with about 5,000 e-learning materials, 2,000 video materials on television, 200 virtual experiments, 200 textbooks, 35,000 multiple-choice questions and over 7,500 doctoral theses, contributing to building a learning society and promoting lifelong learning. MOOC platform for digital skills has been put into operation by the Ministry of Information and Communications since April 2022, including courses on universalizing digital skills in the community, basic digital transformation, digital transformation at commune, digital transformation at

specialized unit, digital transformation at commune core team, the fundamental approach in digital transformation. Up to May 2023, MOOC platform for digital skills supported training and retraining on digital transformation for 204,397 turns of officials, civil servants and public employees of ministries, branches, and localities; foster and train for 255,545 members of the community digital technology group; popularizing digital skills for people reached nearly 18 million visits. In addition, the Vietnam Open Educational Resources (VOER) is supported by the Vietnam Foundation, currently providing 22,268 documents, 525 anthologies from 13,482 authors, so that readers can use, reuse and access freely, free of charge to serve their learning and research needs.

- *Weaknesses:* Regarding OE, although the policy on OE has been institutionalized into a regulation in the Education Law 2019, so far we have not had any specific policies on OE related to OER, OEP and MOOC. As for digital transformation, although we have a legal framework to guide the formation of a digital transformation in the education sector in line with international practices, what we are lacking is that there has not been any scientific investigation to provide reliable answers to a wide range of issues including the gap between the status of digital transformation and its strategic goals; priority tasks; necessary resources and links and cooperation ; performance and evaluation targets; implementation plan, monitoring, evaluation, updating and adjustment (Pham Do Nhat Tien, 2022). Because of the above reasons,

if we consider only the topic of digital transformation in OE, in terms of policy, we are still at the stage of discussion without any policy. In terms of infrastructure, except for the MOOC platform on digital skills built by the Ministry of Information and Communications, we also do not have any national OE platform to meet the needs of the people in lifelong learning. National resources for OE are also not clear.

4.2. At the meso level

- *Strengths*: In terms of policies, higher education institutions in general have either developed or are in the process of creating plans and policies for digital transformation. Regarding infrastructure, the Ministry of Education and Training reports that the information technology infrastructure of universities nationwide is quite sound. Specifically, 100% of universities have computer rooms with LAN, Wi-Fi, and electronic information portals; 90% of universities have established editorial boards for information security and have issued information security regulations; over 90% of universities use training management software and document management software; over 60% of universities use human resources management software and asset management software.

In the context of digitalization in teaching and scientific research, around 110 universities (comprising approximately 50% of all universities) have implemented various levels of regular online education programs. Approximately 60% of universities have introduced digital learning materials and

online quiz systems, and over 70% of higher education institutions have introduced e-libraries and adopted a blended learning approach in their teaching. Notably, the University of Ho Chi Minh City's Open University has implemented the Vietnamese MOOC (VMOOCs) platform with the goal of providing free courses to enhance people's knowledge and promote lifelong learning, offering 61 high-quality courses that meet specific standards. Moreover, Hanoi University of Science and Technology has launched the MOOC platform Daotao.ai, providing 22 courses and eight lifelong learning programs with a focus on trustworthiness, quality, and non-profit principles.

- *Weaknesses*: Currently, there has been no survey to comprehensively assess the current state of digital transformation in higher education. However, based on the implementation of online education during the COVID-19 pandemic, as of late 2020, approximately 45% of higher education institutions were in stages 3 and 4 of online education development, while the remaining 55% were in stages 1, 2, or 3. It is possible that by early 2023, all higher education institutions in Vietnam have implemented online education. However, challenges in digital transformation at the mid-level remain, including: 1) some universities that are not genuinely concerned, lacking internal communication, and not well-integrated with the university's development strategy; 2) some institutions lack a 5-year plan, yearly roadmaps, models, and an overall architecture in applying information technology and digital transformation; 3) some universities

face difficulties in infrastructure and physical facilities, lacking attention to information security, lacking management regulations for information infrastructure; 4) there are common difficulties such as limited financial resources for digital transformation and the development and deployment of digital higher education models, the digital transformation workforce is not fully standardized in terms of quantity and quality to meet new requirements in the rapidly changing digital technology landscape, and digital skills among staff, lecturers, and students remain limited and uneven (Tô Hồng Nam, 2023).

Regarding digital transformation in open education, only around 47% of higher education institutions have policies for open access, and 60% have open educational resource (OER) policies (Pitt et al., 2022). Notably, there is a lack of OER content development by the community. The main reasons are the absence of a national policy on OER, and universities have not recognized the real benefits of OER. There are difficulties related to finances, legal issues, copyright, and intellectual property in OER development. This has led to the issue of developing digital learning resources and solutions being spontaneous and not yet organized into a system, making it difficult to control quality, lacking synchronization, connectivity, and sharing among universities.

Currently, the Ministry of Education and Training has issued Decision No. 4740 on December 6, 2022, on the criteria and evaluation indicators for digital transformation in higher education

institutions. However, none of the criteria relate to OER and MOOCs in teaching, learning, and digital libraries. Digital transformation in open education has not received due attention at both the macro and mid-levels, while one of the fundamental principles of digital transformation in higher education is to develop open and free digital content and platforms to meet the lifelong learning needs of everyone (UN, 2022).

Regarding infrastructure, according to the World Bank (2020), even top universities in the country lack robust information technology infrastructure, along with essential pillars such as effective management and sufficient finances required for establishing and utilizing cutting-edge digital technologies. The existing IT infrastructure (networks, databases, equipment) is fragmented, often inefficient, and lacks compatibility between higher education institutions. There is insufficient centralized storage infrastructure, low-bandwidth networks, and inadequate physical facilities for e-learning. Smart classrooms/computer labs are not standardized, and there is a lack of high-performance computers to support advanced research. Surprisingly, many universities are not connected to VinaRen, so researchers cannot access the global research network. Due to underdeveloped digital learning platforms, along with the absence of an appropriate quality assurance mechanism, the deployment of online courses faces many challenges in serving lifelong learning and students with difficult circumstances.

4.3. At the micro level

- *Strengths*: Survey results from a small sample, comprising 21 faculty members and administrators representing 18 higher education institutions (Pitt et al., 2022), indicate that these institutions provide training and development opportunities for their staff related to digital technology. The focus is mainly on online teaching (87.5% of institutions), educational technology (81.3% of institutions), and instructional design (75%). In general, faculty and students receive support from their institutions in terms of providing tablets, computers, and access to the institution's network for teaching and learning.

A more in-depth survey regarding Open Educational Resources (OER) with a larger sample, including 178 faculty members, 215 librarians, and 190 students (Đỗ Văn Hùng et al., 2019), reveals the following:

- Faculty members and librarians, in general, exhibit a considerable level of interest in OER.

- They see the exploitation of OER as an essential educational resource and are willing to share, reuse, customize, and encourage community use of the educational materials they access.

- *Weaknesses*: Pitt and colleagues (2022) note that institutions' interest in training for open education remains vague. Specifically, training in open access, intellectual property, and OER is provided by only around 25%, 41.2%, and 46.7% of institutions, respectively. The lack of internet connectivity and the absence of computers or smartphones for

online learning continue to be challenges for many disadvantaged students and those in remote areas.

According to Đỗ Văn Hùng and team (2019): The proportion of faculty members and librarians participating in OER-related projects is low (22% and 15%); The percentage of faculty members regularly introducing OER to students for use is also low (24.6%).

The willingness to share resources they create as OER is low among faculty members.

In general, faculty members, students, and librarians have limited awareness and experience regarding copyright and open licenses. Only around 25% of faculty members and approximately 18% of librarians use Creative Commons licenses when sharing educational materials. About 22.7% of students believe there is no need to attribute when using free materials. Overall, faculty members, librarians, and students lack confidence in their technology skills for searching, creating, and sharing educational materials.

4.4. Overall rating

Comparing the current state of digital transformation in open education in our country to that in several countries worldwide, especially in centralized higher education systems like China, we can make the following general assessments:

Despite having a policy to enhance the education system towards openness for the past decade and some positive recent developments, digital transformation in open education in our country is still in

its early stages. When compared to the 10 dimensions of digital transformation in open education, it's evident that we have not made significant progress in any of these 10 dimensions.

The main reason for this is that even though we have a national policy on digital transformation in education and our education system, in general, particularly higher education, operates under a centralized management system, we still lack a national plan for open education. There is no national platform for Open Educational Resources (OER) or Massive Open Online Courses (MOOCs), and there is no national policy for resources dedicated to open education.

As a result, open education activities in our country are currently more of a sporadic nature, with some contributions from higher education institutions, but these institutions themselves lack the necessary policies, platforms, and resources for open education.

V. Identify challenges and gaps

There have been quite a few domestic and foreign articles on the challenges for digital transformation in higher education in developing countries in general, and Vietnam in particular. In summary, the challenges are: 1) The lag in institutions and policies in response to the requirements and practices of the digital transformation; 2) Limited financial resources; 3) Weakness in digital infrastructure, digital platforms, digital technology equipment; 4) Conservatism of the education system in changing organizational culture and activities in response to the requirements of digital

transformation; 5) The shortage of digital human resources and digital capacity; 6) Asynchronous, incompatibility of different digital platforms developed in higher education; 7) The limitations and inadequacies of awareness, capacity and motivation of a part of policy makers, managers, lecturers in digital transformation; 8) Digital gap between different regions, regions, schools, and different learners.

Of course, the digital transformation in OE also faces these challenges. However, these challenges are more acute because in developing countries, and even in some developed countries, OE is not yet a priority area. In the current transition of higher education to digital transformation, when institutions are still mainly organized in the traditional style, with programs designed for formal training as the main, the priorities in digital transformation are the following: programs that progress to diplomas, not OER, MOOCs. Because of that, while the digital transformation in higher education in many developing countries is only in the first stage, the digital transformation in OE can only be at the preliminary level.

That is also the problem in Vietnam. The difference is that although we have had a guiding view from the top leadership for the past 10 years on renovating the education system in the direction of openness, flexibility, and connectivity, the move so far has not changed just around a few small OER and MOOC activities, concentrated in a few higher education institutions and individuals who would like to put IT into teaching and learning.

The gap between guidelines and policies is currently the most worrisome gap that we need to identify when organizing the implementation of digital transformation policy in OE. This gap entails a number of distances that also need to be fully identified:

Many articles, both domestically and internationally, have discussed the challenges of digital transformation in higher education in developing countries in general and Vietnam in particular. These challenges can be summarized as follows:

- *Institutional and policy lag*: Lagging institutional structures and policies in response to the demands and realities of digital transformation.

- *Financial constraints*: Limited financial resources available for digital transformation initiatives.

- *Digital infrastructure limitations*: Inadequate digital infrastructure, digital platforms, and technology equipment.

- *Organizational culture resistance*: The traditional nature of education institutions and their resistance to changing organizational culture in the face of digital transformation requirements.

- *Digital skills and workforce gap*: A lack of digital skills and a shortage of qualified personnel to meet the demands of digital transformation.

- *Discrepancies between digital platforms*: Lack of compatibility and consistency among various digital platforms developed in higher education.

- *Limited awareness and motivation*: Inadequate awareness, motivation, and capacity among policy makers,

administrators, and educators regarding digital transformation.

- *Digital divide*: The divide in digital access and resources among different regions, urban and rural areas, and various demographic groups.

However, it is important to note that these challenges are even more pronounced in developing countries, including Vietnam, due to the lower priority placed on open education in these regions. Currently, as higher education institutions primarily follow a traditional format with an emphasis on formal degree programs, priorities for digital transformation tend to focus on degree programs rather than Open Educational Resources (OER) or Massive Open Online Courses (MOOCs). As a result, the level of digital transformation in open education remains relatively rudimentary, even as many developing countries have only begun their journey towards digital transformation in higher education.

The significant gap between policies and their implementation poses the most concerning issue when it comes to organizing digital transformation in open education. This gap is intertwined with several other gaps that need to be recognized:

- *The gap between the current state and desired objectives*: The desire to provide equal access to open, flexible, and modern education by 2030 contrasts with the current closed and inflexible system, highlighting a considerable gap between the present state and desired goals.

- *The technology infrastructure gap*: Developing and maintaining digital

infrastructure for teaching, learning, research, and administration presents challenges concerning the level of development, readiness, and alignment of various infrastructures.

- *The digital skills gap*: A prerequisite for successful digital transformation in open education is ensuring that administrators, lecturers, librarians, and students possess adequate digital skills. However, current vague digital skill standards are a major obstacle to digital transformation.

- *The digital divide*: Disparities in access to digital resources and education between different regions, urban and rural areas, and various demographic groups may worsen with the increasing pace of digital transformation.

Until in-depth surveys are conducted to clarify these gaps, the goal of achieving digital transformation in open education by 2030 may remain an aspirational statement.

VI. Conclusion

Perhaps, at this point, Vietnam is the only country in the world that has incorporated the following provision into its Education Law: “Develop an open education system, build a learning society to provide opportunities for everyone to access education, learn at all levels, in all forms, and throughout life” (Article 3, Section 4). Implementing digital transformation in open education is a necessary and primary solution to establish an educational ecosystem that realizes this provision in practice.

In this educational ecosystem,

higher education institutions should develop into beacons of lifelong learning. This observation was made in the scientific report “International Trends in Lifelong Learning in Higher Education” (UNESCO and Shanghai Open University, 2023). Along with this observation is the following recognition: For higher education institutions to successfully fulfill the mission of lifelong learning, strategic actions are needed at multiple levels. The national policy environment plays a crucial role in determining the scope of activities of higher education institutions, as well as mobilizing and allocating resources. Only in this way can higher education institutions be motivated to provide lifelong learning opportunities.

From the above recognition and the lessons learned above, this article points out that there is a significant gap between the aspiration for open education and lifelong learning on one side, and the absence of a national policy environment for digital transformation in open education on the other.

There have been many policy recommendations in this regard, especially UNESCO’s 2019 recommendations on Open Educational Resources (OER). However, to develop feasible policies in the specific context of the country, it is essential to fully identify the gaps, with the most crucial ones being the gaps between the current state and the desired objectives, the digital infrastructure gaps, and the digital capacity gaps. Additionally, the digital divide between different regions, rural and urban areas, and different demographic groups is a major issue.

This means that instead of having a scattered policy system as we have traditionally done, it is essential to first focus on the issuance and effective implementation of prioritized policies aimed at reducing these gaps.

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