

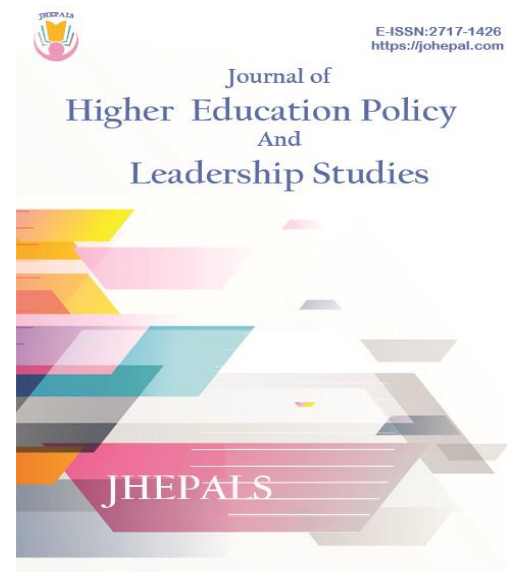
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**Leveraging Open  
Educational Resources to  
Promote Openness and  
Internationalization in  
Education: A Case Study of  
SHMS According to  
UNESCO Recommendations**



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**Leveraging Open Educational Resources to Promote Openness and Internationalization in Education: A Case Study of SHMS According to UNESCO Recommendations**

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**Abstract**

This case study establishes a roadmap for exploring the alignment between national OER initiatives and global standards, using the SHAMS platform as a case study within the ambit of UNESCO's transformative educational agenda, identifying exemplary practices and areas necessitating further development. Such recommendations serve as a framework that facilitates the provision of inclusive OERs and equitable quality learning opportunities. This case study recommends strategizing OER use in the education system by envisioning ideal OER implementation processes, planning the expected impact on teachers and students, teaching strategies, curricula, and assessments. The case study highlights the importance of leadership, quality assurance, licensing and copyright protection mechanisms, content creation, policies, and access as enablers of optimal resource-sharing practices. It involves a literature review on virtual internationalization and OERs, situating the SHAMS platform within the UNESCO framework and examining its alignment with national educational strategies. By intertwining the evaluation of the SHAMS platform with UNESCO's OER Recommendations, this case study is poised to contribute to the discourse on OER implementation, providing empirical evidence of how national platforms can operationalize international frameworks to foster a more open and scalable educational environment.

**Tahani I. Aldosemani \***

**Keywords:** Internationalization; Open Educational Resources; SHAMS; UNESCO Recommendations; Openness in Education; Higher Education

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## **Introduction**

Education is a critical force behind global development. Local and global investment in education is an investment in people, their understanding of the world, their expansion of economic and social horizons, and their productivity, creativity, and innovation. Challenging the frontiers of innovation and creativity and facing rapid changes and significant challenges daily, we realize that we must develop new approaches to education in our changing world. Investing and revitalizing new approaches becomes clear when we recognize that education drives economic development. Education increases productivity, enables creativity, and supports entrepreneurship and technological advances. Therefore, countries can invest in human development by investing in education to advance and sustain economies (Ozturk, 2001).

Developing innovative teaching and learning practices that respond to current and future demands is critical. A globalized and sustainable future must begin with education at a very early age. Global competencies and skills extend beyond disciplinary and specialized understanding. An education model aimed at global prosperity and peace must promote learning outcomes related to effective collaboration, ethical decision-making, social identity formation, and consensus-building communication (Sheetz, 2009). However, the desire for innovation and widespread access to education may need to be increased. Understanding how knowledge is developed, organized, and utilized internationally is necessary. This knowledge needs to be brought to local classrooms to achieve the required outcomes for building skills and competencies in the 21st century. Combining such analysis and integration will allow for the redefinition of internationalization. It can demonstrate that more than a single set of national policy tools and processes is needed to meet future demands.

## **Literature Review**

### **Internationalization in Education**

The internationalization of education is a strategic priority for governments worldwide because of its economic, political, social, and academic benefits. Indeed, internationalization is at the forefront of policy agendas worldwide (De Wit & Altbach, 2021).

Internationalization is a multilevel phenomenon that includes institutional, national, international, and transnational efforts. Internationalization has been conceptualized as an ‘escape’ of the flow of ideas, programs, activities, and research across national boundaries (Beck, 2012). In the same vein, De Wit and Hunter (2015, p. 45) defined internationalization as “the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of post-secondary education”.

The internationalization of education also encompasses “policies and practices undertaken by academic systems and institutions—and even individuals—to cope with the global academic environment” (Knight & McNamara, 2017, p. 290). It encompasses both at home and abroad internationalization, which means that it can be promoted not only through the movement of people but also through the mobility of courses, programs, and institutions. Focusing on the mobility of courses, programs, and institutions, the term Transnational Education (TNE) entails a vast and growing range of mobile learning forms (De

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Corte et al., 2016) beyond an exclusive focus on geographic mobility and migration of students to broader internationalization forms such as internationalization at home or virtual internationalization.

### **Paradigm Shift to Virtual Internationalization**

One of the most significant recent shifts in higher education has been the extension of cross-border mobility from the geographic mobility of students and faculty members to the movement of educational programs and institutions. International digital activity platforms complement traditional internationalization activities. The growing role of virtual border-crossing (e.g., e-learning across borders and MOOCs) programs and platforms and open learning platforms have gained international scholarly attention (Bol et al., 2021). They are expected to substantially enhance the opportunities for the wide accessibility of virtually transferred knowledge (Knight & McNamara, 2017; Lawton, 2015). The additional modes of cross-border higher education can be connected to international students' mobility initiatives. According to Gao et al. (2015, p. 759) “the new information technologies provide powerful support to the openness of political culture in higher education” and “internationalization of higher education requires the universities to make full use of the modern technologies and equipment to improve the teaching level continuously”.

### **Openness in Education**

The openness of digital resources is anticipated to be a significant driver in educational innovation, transforming higher education by providing students with international experiences and global perspectives. Organizations, governments, and individuals worldwide are actively engaging with Open Educational Resources (OERs) and Massive Open Online Courses (MOOCs) by contributing to, supporting, and accessing these resources online (Hilton, 2016). This trend is broadening and diversifying the teaching process and encouraging the creation, sharing, and reuse of OERs among academics. The global move towards open education fosters idea-sharing and collaboration between local and international institutions, educators, and students, leading to deeper engagement in teaching and learning.

Openness in education is manifested in several forms (Brandle, 2018). Open Curriculum allows students to tailor their learning by choosing different educational resources that meet their needs. Open Learning involves educators sharing various activities to encourage new idea generation and exchange during learning, promoting learner autonomy and interest-driven education. Open Assessment challenges traditional evaluation methods by incorporating peer reviews and crowdsourced assessments, offering flexible accreditation opportunities. Lastly, Open Platform focuses on creating user-friendly interfaces for an interactive educational community. Cloud-based solutions and open standards also enhance data and information exchange across different platforms and services. Digital open education provides international opportunities in education and reshapes the global higher education landscape, encouraging institutions to adopt open access, OERs, and online courses (Siemens, 2015).

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### ***Trends of Open Education***

Open education through platforms such as Massive Open Online Courses (MOOCs) and Open Educational Resources (OERs) is vital in addressing the issues and challenges of an ever-changing environment that requires new ways of delivering and accessing knowledge, supported by many factors. These factors include globalization and increased momentum for internationalization in higher education, growing demand for access to higher education, and the projection that there will be 120 million students worldwide by 2030, with 2.3 million being internationally mobile (Wildavsky, 2015). Similarly, the change in learner demographics and the increase in adult learners associated with access to personal technology and social media support these international trends toward open education.

### ***MOOCs***

In contrast to traditional university online courses, MOOCs have the two main features of open access and scalability. MOOCs offer open access, allowing anyone to participate freely, and are scalable and designed to accommodate unlimited participants. The development of MOOCs is based on the need for openness in education, free sharing of knowledge, and the availability of independent learning. This is true regardless of demographic, economic, and geographical constraints. The concept of openness in education has evolved rapidly since 2000. However, such a concept originated in the early 21st century (UNESCO, 2002). MOOCs' scalability and openness provide opportunities for expanding and providing access to international educational pedagogies, enhancing global students' experiences and perspectives. MOOCs can serve as a means for higher education students to think creatively and innovatively about the future and explore new pedagogical practices.

### ***OERs***

Open Educational Resources are teaching, learning, and research materials in any medium (digital or otherwise) that resides in the public domain. The concept of OERs was initiated to create a new platform and improve access to knowledge across existing digital, societal, and cultural divides (D'Antoni, 2009). They may have been released under an open license that permits no-cost access, use, adaptation, and redistribution by people with limited or no restrictions. OERs are part of "Open Solutions" alongside Free and Open-Source Software (FOSS), Open Access (OA), Open Data (OD), and crowdsourcing platforms (Sanjaya, 2017). Open Education Resources term was first coined in 2002 at a forum organized by the United Nations Educational, Scientific, and Cultural Organization UNESCO (2005). UNESCO (2005) defines OERs as any educational material in the public domain or introduced with an open license. Therefore, 'open' typically implies free access to resources and the freedom to modify them without additional permissions.

### ***UNESCO OER Recommendations***

Open materials are designed to be legally and freely copied, used, adapted, and re-shared by anyone, anywhere. In November 2019, the 40th UNESCO General Conference adopted the UNESCO OER Recommendations as an international standard-setting framework policy. The initiative's core aim is to provide universal access to information through high-quality education and seeks to contribute to global citizenship values, sustainable economic development, and intercultural dialogue. OERs provide a strategic opportunity to improve

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the quality of education, encourage policy dialogue, and promote knowledge sharing and capacity building globally. Indeed, among the most important recommendations by UNESCO is that OERs should enhance access to equitable quality of knowledge and facilitate international cooperation. The UNESCO OER Recommendation consisted of five strategic goals: first, 'building the capacity of stakeholders to create access, use, adapt and redistribute OER'; second, 'developing supportive policy'; third, 'encouraging inclusive and equitable quality OER'; fourth, 'nurturing the creation of sustainability models for OER' and fifth, 'facilitating international cooperation.' The broad scope and global ideology embedded in OERs are deliberate and purposeful (UNESCO, 2005). UNESCO's recommendations highlight that OERs aim to address inclusive and equitable access to knowledge.

OER movement was strategically planned to leverage the power and potential of online education. The initiative aimed to bring knowledge, online tools, international education, and expertise to disadvantaged students in geographically isolated societies (Knight & McNamara, 2017). Indeed, open and shareable educational resources can mitigate the unequal distribution of academic resources (i.e., journals and databases), computer and Internet access, and professional development training opportunities (UNESCO, 2002).

### Research Methodology

This case study analyzes and evaluates the National OER platform of Saudi Arabia SHAMS in the context of UNESCO's OER Recommendations. Data were collected through the analysis of the project policy documents. A thematic analysis approach supported assessing the qualitative data against UNESCO's guidelines. Study outcomes include insights into SHAMS' operational alignment with international standards. The study aims to contribute to understanding how national OER platforms SHAMS can embody UNESCO's recommendations, providing a model for global educational resources analysis and sharing (Table 1).

Table 1.  
Research Methodology Overview

Research Phase	Description	Detailed Components
Data Collection	Gathering qualitative data through a comprehensive review of various documents related to SHAMS and UNESCO's guidelines.	<ul style="list-style-type: none"> <li>• Policy documents and strategic plans, including NCEL policy documents, NCEL implementation documents, and Saudi Vision 2030 education-related documents.</li> <li>• Implementation Reports, including SHAMS implementation stages and progress reports.</li> <li>• Training Materials and Workshops Content: Partnership Agreements and Collaborations: SHMS Platform content, resources, and statistics</li> <li>• Feedback and Evaluation Reports</li> <li>• SHMS research studies and literature</li> </ul>

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<b>Data Analysis</b>	Employing thematic analysis to interpret the data in relation to UNESCO's OER Recommendations.	<ul style="list-style-type: none"><li>• Familiarization with data through initial reading and understanding of the content.</li><li>• Generating initial codes by identifying significant themes related to OER recommendations. Searching and reviewing themes by collating codes into potential themes and sub-themes.</li><li>• Refining and analyzing themes to represent the data accurately.</li><li>• Structuring the analysis into a coherent narrative of SHMS application of international OER standards.</li></ul>
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### ***National OER Program Background***

The Saudi National Open Education Content Program was established in alignment with the Fourth Sustainable Development Goal (SDG 4: Quality Education) to ensure inclusive and equitable quality education and promote lifelong learning opportunities. More specifically, it aligns with the second category of promoting integrated mechanisms for sustainable development. The Saudi OER platform "Shabakat Mowared Saudia" (SHMS) in Arabic\*, the direct translation of Saudi Resources Network, contains over 50,000 resources, with 37,000 published and 20,000 in the review cycle. SHMS hosts over 23,800 Arabic OERs, and 95% of its resources are from Saudi Arabia. Over 75,000 OERs authored on SHMS are by more than 10,000 authors and more than 50 participating institutions across Saudi Arabia, both from general and higher education. Furthermore, more than 7,000 participating SHMS ambassadors were trained between 2017 and 2019, and over 5,000 educators were trained in approximately 50 workshops conducted across the country (NCeL, 2023).

The National E-learning Center (NCEL) implements the National Program for Open Educational Resources to fulfill Saudi Vision 2030 goals to support human capability development (Saudi Vision 2030, 2017). The National Open Education Resources Program's strategic plan is to create a culture of interactive open resources, standardized accreditation, and sustainable partnerships. The project aims to support quality e-learning and teaching opportunities, enhance collaboration in creating high-quality open content, and enrich the knowledge and science openness culture through digital solutions and initiatives. It aimed to achieve four main goals: 1) eliminate any potential barriers or challenges, including financial or accessibility issues; 2) provide free and open access resources for educators and students with easy sharing and dissemination of licenses; 3) ensure adequate investment and sustainability of the project's public funding for all beneficiaries, including teachers, faculty members, scholars, researchers, and state employees; and 4) create an environment that stimulates and supports creativity and innovation, and facilitates communication among stakeholders (NCeL, 2023).

The platform was launched based on two main pillars: openness and shareability. The former pertains to providing free access to content, freedom of search, browsing resources, and downloading and sharing content. The latter is based on a collaborative approach to content creation and enrichment, sharing and improving open content quality, collaborating with experts, and connecting with educational institutions' systems. SHMS' strategic plan was supported by a clear vision, flexible content-sharing processes, plans to empower

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\* <https://nelc.gov.sa/en/services/oerx>

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faculty members and teachers, and initiatives to ensure successful project leadership and business continuity.

### **Discussion**

#### **SHMS and UNESCO OER Recommendations Framework**

##### ***First Recommendation: Supporting SHMS Stakeholders' Capacity***

The first UNESCO recommendation for OERs is building stakeholders' capacity to create, access, use, adapt, and redistribute OERs. Additionally, capacity building can be achieved by enhancing stakeholders' and communities' awareness of how OERs can increase access to educational and research resources, support learning outcomes' attainment, maximize investment in public funding, and empower educators and learners to become co-creators of knowledge. This also includes providing sustainable and systematic capacity building on creating and redistributing OERs as a core component of training programs at all educational levels. Additionally, this should include stakeholders' understanding of OERs, support for integration into learning, teaching, research, and everyday life, and raising awareness of exceptions and limitations on using copyrighted works for education and research. Similarly, this includes leveraging open-licensed tools, platforms with interoperation of metadata, and standards to ensure that OERs can be easily found, accessed, reused, adapted, and redistributed in a safe, secure, and privacy-protected mode. It also includes promoting digital literacy skills (UNESCO, 2005).

The first objective of the national OER SHMS is to develop human resources and build the capacity of internal stakeholders and staff to lead and manage the national OER project. According to the program structure, stakeholders are provided with training opportunities for administrative and management tasks. Additionally, the program offers competent human resources for managing all administrative and specialized job tasks equipped with the necessary skills for the program's implementation and administration. The second objective is to build the capacity of external stakeholders by equipping faculty members, educational leaders, supervisors, and teachers with digital content authoring, curating skills, and enhancing their OER skills.

##### ***National OER Program Leadership***

In 2018, the digital transformation ministerial committee and its cascading steering e-learning committees recommended commencing immediate initiatives in open digital content. These leadership efforts included expanding the SHMS platform to include all Saudi universities, general education directorates, and training institutions in the next two years. This goal was achieved by following an execution plan that includes first evaluating and improving the SHMS platform and extending its application to member universities during the second quarter of 2017. This goal was achieved by providing all students and faculty members with SHMS membership to join the platform during the fourth quarter of 2017.

Moreover, teacher membership was facilitated during the second quarter of 2018. Second, the execution plan ensured continuous content improvement and supported uploading rich educational resources. Third, it ensured sustainable financial support to operate the platform through operation, development, and content enrichment. Consequently, SHMS platform entered into successful partnerships with 30 national entities,

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including 16 universities and four ministries (i.e., the Ministry of Education, Ministry of Communication and Information Technology, Ministry of Human Resources, Ministry of Economy and Planning, Education and Training Evaluation Commission, Public Administration Institute, Technical and Vocational Training Corporation, Saudi Aramco, Saudi Digital Library, and the Saudi Research & Innovation Network) (Maeen Network) (NCeL, 2023; NCeL, 2022).

These partnerships also included key private entities in e-learning, digital content, and resources, including Doroob, Tatweer Holding, and T4edu Education Development Services. International partnerships included successful cooperation with ISKME, e2f, OER Educational Resources, Achieve, Creative Commons, and UNESCO. The Saudi OER program launched seven successful initiatives to achieve its strategic goals: (1) SHMS Platform, (2) SHMS Author, (3) SHMS Cloud, (3) Rabeh (champion) license, (4) OER Distinguished Achievement Award, (5) SHMS Ambassadors, (6) SHMS Sana, and (7) SHMS Certificate. Major services will be discussed further in the following sections.

### *SHMS Platform*

SHMS is a national OER platform that aims to enrich educational content to support education. It also serves as a sustainable portal for digital content design, improvement, and sharing to provide opportunities for learning and teaching. The platform includes 22 online higher education courses and has 4029 high-quality educational resources for k-12 students provided by the Ministry of Education. Moreover, it includes content repositories for digital design, professional development, instructional systems, and social communication; it comprises more than 110,000 Creative Commons licensed photos.

Furthermore, the NCEL implemented new knowledge creation and dissemination tools, such as speech recognition technology, pictures, quizzes, Twitter feeds, and video and audio chatting. SHMS ensures compatibility with OERs' international standards, such as the Sharable Content Object Reference Model, LTI, Metadata, Tin CAN API, IMS, and LMS. The NCEL also drafted accessibility standards for OERs for users with special needs. It also developed a project to ensure the diversity of local education resource products for all specialties (NCeL, 2023; NCeL, 2022).

### *SHMS Cloud*

SHMS Cloud is a cloud-computing technology that hosts indexed resources with keywords and descriptive data information. It includes the title, author, educational content, and license. SHMS Cloud's technical support team guides content categorization and indexing while adopting good practices. The NCEL has partnered with several entities through the Program for the Establishment of the National Platform to support cloud computing, the Single Access System for Open Educational Resources, and the automation of educational resources policies and licenses at the national level (NCeL, 2023; NCeL, 2022).

### ***Second Recommendation: Develop SHMS' Supportive Policy***

Through its second OER recommendation, UNESCO encourages member states to develop policies that enhance investment in educational resources developed with public funds. Institutions are encouraged to allocate financial and human resources to implement and evaluate policies; additionally, they should develop policy frameworks to enhance the

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creation, adaptation, and redistribution of quality OERs by educators and learners aligned with national copyright regulations and international obligations. These institutions must develop a quality assurance mechanism for OERs. UNESCO also encourages stimulating mechanisms to create communities of practice, foster teachers' professional development, use OERs, and sustain networks of OER experts (UNESCO, 2005; D'Antoni, 2009).

The second goal of the NCEL is to achieve an adequate funding plan and efficient spending through effectively managing government budget allocations to educational resources from the state's central budget. The NCEL also adopted policies and regulations that ensure the availability and sustainability of educational resources and educational and training programs. Additionally, efficient spending is planned by building financial models managed by the NCEL to enhance its financial capabilities to support the OER initiative. Thus, OERs can be supported through various flexible and competitive financing options and plans, including university-paid service fees and rounded savings from the previous fiscal year's budget, grants, donations, endowments, and other supportive financial resources (NCEL, 2023; NCEL, 2022).

### ***Third Recommendation: SHMS Resources Quality and Effectiveness***

The third UNESCO recommendation highlights the importance of supporting the creation, access, reuse, redistribution, and adaptation of inclusive and equitable quality OERs for all stakeholders. This can be achieved by ensuring the provision of offline modalities and the development of gender, culture, and linguistically relevant OERs. Additionally, direct public investment, ICT infrastructure, and broadband can enhance access to educational resources. These can also incentivize adapting evidence-based standards and benchmarks for quality assurance, as well as developing and researching OERs (UNESCO, 2005).

#### ***Encouraging inclusive and equitable quality OER***

The NCEL planned to ensure quality assurance mechanisms for the educational resources initiative by providing standards for authoring and curating open digital content.

It also sets standards for participants, individuals, or entities in authoring open digital content. The NCEL worked on programs that rely on a centralized governance model of quality control and a decentralized model for producing and disseminating content and standardization of open educational resources production and dissemination techniques.

#### ***SHMS Training and Capacity Building***

The National E-learning Center launched a program with six professional and gamified training levels. The training program consists of OER Future Instructors One and Two, with specific prerequisites on digital knowledge and skills. The first and second levels are dedicated to OER best practices and SHMS platform features and tools. The third level provides knowledge and skills training on educational multimedia design and creation. The fourth level is dedicated to the SHMS author portfolio; the fifth is for preparing instructors for e-course design skills. Finally, the sixth level is on technological implementation in education. Each program has specific topics that offer OER knowledge, skills, and values. The National OER published and disseminated several instructional and training materials, such as Creative Commons Organization, Authoring and Publishing Rights, Creative Commons Building Blocks, Creative Commons Usage, Licensed Publications, Creative Commons for

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Educators, OERs for Teachers and Students, and OERs for Everyone resulted in recruiting 7101 members, more than 2000 training hours, 15 university memberships, 75 educational institutions, 376,000 resources, 108,000 higher education resources, and 268,000 for K-12 education (NCEl, 2023; NCEl, 2022).

### *SHMS Award*

SHMS award is another NCEl initiative that seeks to increase community engagement with OERs in three categories. The first is for educational institutions, for active participation with platform enrichment with resources. The second is the members' category for individuals from academic institutions, and the third is for governmental institutions and the private sector for active participation through sharing, authoring, and investing in open resources with three categories: (1) initiative, (2) dedicated, and (3) distinguished participants. SHMS ambassadors led the initiative to recruit talent for digital content production and publishing through OERs. (NCEl, 2023, NCEl, 2022).

### ***Fourth Recommendation: Stimulating Creativity and Scientific Research in SHMS***

According to the fourth UNESCO recommendation, member states should consider developing inclusive and integrated OER sustainability models. This goal can be achieved through the procurement policies' enhancement, sustainability models' catalyzation through traditional and non-traditional funding resources, raising awareness of value-added models using OERs across institutions and countries, and enacting regulatory frameworks to support the OERs' development (UNESCO,2005). One of the critical goals of SHMS is to enhance creativity and scientific research to support the development of OER programs and tools on the national platform. These facilitated the development of the national platform's applications, programs, and tools. The NCEl developed the National Forum for Participation in the Circulation of Ideas, Innovations, Research Results, and Scientific Trends in the Field of OERs to enhance innovation and research in OERs. This program supports and develops a national platform to promote the adoption of key initiatives.

### ***Fifth Recommendation: SHMS International Partnerships***

The fifth recommendation focuses on international cooperation among all relevant stakeholders in stimulating cross-border collaboration and alliances in OER projects and programs. Additionally, it highlights the importance of establishing regional and international funding mechanisms and supporting the development of an international framework for copyright exceptions and educational limitations. It emphasizes the significance of supporting intercultural communication skills' participation and multicultural groups' management to foster universal values (UNESCO, 2005).

To develop international partnerships and cooperation, the NCEl launched several initiatives. The NCEl successfully collaborated and partnered with the Creative Commons and adopted the latter's licensing mechanisms. Furthermore, the Center worked on an English translation project of educational content and facilitated their dissemination in different disciplines to provide OER services at scale.

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### **Conclusion**

Open education can play an essential role in ensuring access to education for all. It is, thus, vital to address the issues and challenges of an ever-changing environment that requires new ways of delivering and accessing knowledge amidst many factors. Implementing OERs requires adopting a holistic and multidimensional approach based on UNESCO recommendations as a starting point for the national OER framework. Such a framework facilitates the provision of inclusive OERs and equitable quality learning opportunities. Educational leaders must strategize using OERs in the education system by envisioning ideal OER implementation processes, planning for their expected impact on teachers and students, teaching strategies, curricula, and assessments, and setting key performance and success factors. Educational leaders should also determine the required personnel, technical infrastructure, instructional materials, and tools necessary for the framework's success.

Quality assurance, licensing and copyright protection mechanisms, content creation, policies, and access enablers must be developed to align best resource-sharing practices. Educational leaders should also determine and plan stakeholder engagement and communication, as well as training resources and initiatives. By intertwining the evaluation of the SHAMS platform with UNESCO's OER Recommendations, this study is poised to contribute to the discourse on OER implementation. It provides empirical evidence of how national platforms can operationalize international frameworks to foster a more open educational environment.

### **Declaration of Conflicting Interests**

The author declares there is no conflict of interest.

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### **Human Participants**

There are no human participants in the current research; however, other ethical guidelines are observed in alignment with the journal's policy.

### **Originality Note**

The author confirms that the manuscript is her original work, and if others' works are used, they are properly cited/quoted.

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