



INTERNATIONAL
COUNCIL FOR OPEN AND
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**OPEN INNOVATION
FRAMEWORK:** EMERGING
NARRATIVES FROM THE ICDE
OER ADVOCACY COMMITTEE

**OPEN SCIENCE, OPEN
EDUCATIONAL
RESOURCES, AND
OPEN INNOVATION**

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ABSTRACT

Open education is an umbrella term under which various notions of open education can be accommodated.

This paper addresses open educational resources, open science, and open innovation. A proposed framework for Open Innovation is suggested. In summary, the main points and suggested applications are:

1. review the mission and policies of higher education institutions as well as education professionals (researchers, professors), align them with the recommendations of the 2030 Agenda, and design the application of open innovation, Open Science, and open educational resources, considering institutional priorities and requirements.
2. collaborate in a task force to promote and identify partnerships and promote digital curation when possible.
3. design and develop professional training to support education professionals (managers, researchers, teachers) as a baseline and intermediate reference model for Open Innovation, Open Science, and Open Educational Resources based on global experience.

Keywords: Open Access, Open Education, Open Innovation, Open Science, OER, UNESCO.

INTRODUCTION

Open education is an umbrella term under which various conceptions of openness in education can be accommodated. It is assumed that many have a clear idea of what open education means. However, this is only an assumption. In the spirit of inclusion, it is necessary to take a small step back to gain a broader understanding of open education.

This will ultimately contribute to a better understanding of developments in open education and its likely impact on teaching and learning (Bates, 2015). Concepts that provide insight into open education include: Education for all - free or very low-cost school, college, or college education available to everyone within a given jurisdiction, usually funded primarily by the state; Open Access to programs that lead to fully recognized credentials; Open Access to courses or programs that do not seek formal credit; open educational resources that teachers or learners can use for free; open textbooks, .i.e., online textbooks that students can use for free; open research, where research papers are made available online for free download; and open data, i.e., data that can be used, reused, and redistributed by anyone, subject to labeling and sharing requirements at best (Bates, 2015). Open education goes beyond Open Educational Resources (OER) and open research outputs to encompass strategic decision-making, teaching methods, collaboration between individuals and institutions, recognition of non-formal learning, and various modes of content delivery. However, open education has been closely associated with OER and Massive Open Online Courses (MOOCs) for many years. According to Inamorato dos Santos (2016), open education is becoming increasingly important in higher education, as digital technologies are one of the main drivers for the modernization of education. The use of digital technologies for teaching and learning is no longer limited to open or virtual universities, but has expanded to all types of institutions, both more traditional and avant-garde. Opening up education is an important item on the political agenda for many reasons. Inamorato dos Santos (2016) argued that:

- First, it can help reduce or eliminate barriers to education (e.g., cost, geography, time, access requirements). This gives learners the opportunity to continue their education or retrain at little or almost no cost and in a flexible manner.
- Second, it supports the modernization of higher education in Europe, as open educational opportunities are now largely delivered via digital technologies.
- Finally, it opens up the possibility of bridging non-formal and formal education. This can happen when universities and other accredited institutions recognize the certificates, they each issue to learners.

Bates (2015) and McGreal (2017) argued that Open Education can take a number of forms, such as open textbooks, open curricula, open research, open pedagogy, open data, Open Access to programs. "The term often describes not only the policies, practices, resources, curricula, and pedagogy, but also their inherent values and the relationships between teachers and learners" (Cronin & MacLaren, 2018 p.1). The goal of open education as a science is to provide an unprecedented opportunity to increase student access to higher education and ensure that education produced with public funds is made available to all. Technology

has made it possible for students to study anywhere, anytime. This has allowed students to spend the majority of their time outside of the classroom (Putkin et al., 2016; Sarkam et al., 2019). With the explosion of social networks and smartphones, online services cope with different types of relationships among users. This immediate, universal, and diverse mode of communication allows for different resources and access than textbooks (Curran et al., 2019). The innovative integration of the environment outside the classroom with the formal, official setting is a reality (Burgos, 2013). This interaction is fostered by reward, altruism, and privileged information as key drivers for active contribution in a community (Hummel et al., 2005).

However, over time, many more pillars were added to the concept of open education, which already included research, collaboration, recognition, pedagogy, quality, leadership, and strategy, such as Open Access, technology, and data (Foster, 2017). This combination of pillars was modeled into what is now referred to as Open Science (Kelley & Knowles, 2016). Open Science represents a relatively new approach to the scientific process based on collaborative work and new ways of disseminating knowledge using digital technologies and new collaborative tools (European Commission, 2016). The idea of Open Science is supported by a number of contributions that focus on the implementation of Open Science, starting with the integration of all the fundamental pillars in the process (Burgos, 2020). Open Science can have a real impact in the academic context, complementing formal, accredited programs based on skills acquisition (Zakharov et al., 2017). Stimulating learning through competencies favors the implementation of activities and assessments that integrate Open Science actions (Gomes de Gusmão, 2022). A milestone in the Open Science movement is the initiative of UNESCO (2021) on a recommendation inspired by the OER recommendation (UNESCO, 2019). Open Access, Open Science, and OER form a broad movement, Open Education, that is critical to advancing knowledge discovery and harnessing our potential to solve big problems and make new discoveries. These three aspects of "Open" have become a necessity in the "new normal" and will play a key role in achieving SDG 4 goals both in developing countries and beyond the pandemic.

After this brief introduction, this report is organized as follows: First, the research questions and methodology are described, followed by UNESCO 's commitments to the two recommendations on OER and Open Science. This is followed by a brief description of the ICDE OERAC Open Lab workshop at the ICDE Virtual Global Conference Week 2021, where this research originated. This is followed by a discussion of Open Innovation, one of the main concerns of this report. Finally, conclusions and recommendations are described.

RESEARCH QUESTIONS AND METHODOLOGY

The main research question in this Open Lab workshop during the ICDE Virtual Global Conference Week 2021 (VGCW2021), is how Open Science can support the design, implementation, and validation of formal, non-formal, and informal learning environments in innovative ways (e.g., under the term Open Innovation). In answering this question, we are moving from an academy-based approach to an integrated, actor-based approach that is multifaceted (appealing to different types of users), multi-channel (using multiple communication channels), and multi-sourced (accessing information simultaneously from many sources).

To this end, the following methodology was developed in a two-step process:

- The ICDE OER Advocacy Committee (OERAC) hosted an Open Lab Workshop where participants could learn from each other and problem-solve together, with the goal of creating a common framework for Open Science. This became part of the Responsive Action at the ICDE Virtual Global Conference Week (VGCW) 2021.
- The ultimate goal was to produce a white paper (publication) explaining the foundation, framework, and process.

In line with the current trend towards Open Science, this collaborative work as an Open Lab, together with the resulting publication, serves as a guide and/or framework that can be further implemented at the individual and/or institutional level.

THE UNESCO COMMITMENTS

The United Nations (UN) commitments are based on the Universal Declaration of Human Rights, which states that all people have inalienable fundamental rights and freedoms, including the right to receive and impart information and ideas through any media and regardless of frontiers (Article 19) and the right to education (Article 26). In addition, UNESCO's constitutional commitment to the "free exchange of ideas and knowledge" supports the sharing of knowledge through technology.

What is an UN Recommendation?

The normative instruments of UNESCO are conventions, recommendations, and declarations. A recommendation makes proposals to UNESCO member states on actions that could be taken in a particular area and requires member states to report regularly on those actions. In addition, a recommendation is flexible enough to be quickly adapted to ongoing technological developments.

The UNESCO recommendations on OER and Open Science

OPEN ACCESS

Open Access, in the sense of Open Science, is a set of principles and practices by which research results are disseminated online without incurring costs or other barriers to access. Open Access in the strict sense, or free Open Access, also reduces or eliminates barriers to copying or reuse through the application of an open copyright license.

Open Access means the free, immediate online availability of research articles combined with the rights to use them fully in the digital environment. Open Access is the necessary modern update to the communication of research results that fully leverages the Internet for what it was originally created for - accelerating research. There is a fundamental disconnect between what is possible with digital technology - an open system for communicating research results that anyone, anywhere can contribute to - and our outdated publishing system, which has led to the call for Open Access. The current system for communicating research results is paralyzed by a century-old model that is not adapted to 21st century technology.

OPEN EDUCATION RESOURCES

A milestone in education was reached with the unanimous adoption of the UNESCO OER recommendation by the General Assembly on November 25, 2019. The adoption and global implementation of OER is one of the only ways to achieve quality education for all and realize SDG4 of UN UNESCO. At the international level, the adoption of the recommendation represents a critical step towards building open and inclusive knowledge societies and achieving the 2030 Agenda of UN. Indeed, the implementation of the Recommendation will

contribute to the achievement of at least six Sustainable Development Goals (SDGs), namely SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 9 (Industry, Innovation, and Infrastructure), SDG 10 (Reduce Inequalities within and between Countries), SDG 16 (Peace, Justice and Strong Institutions) and SDG 17 (Partnerships for the Goals). At the same time, the definition of OER and open licenses were redefined to read (UNESCO, 2019):

Open Educational Resources (OER) are learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation, and redistribution by others.

and

Open license refers to a license that respects the intellectual property rights of the copyright owner and provides permissions granting the public the rights to access, re-use, re-purpose, adapt and redistribute educational materials.

The recommendation on OER supports the creation, use, and adaptation of inclusive and high-quality OER and facilitates international collaboration in this area (UNESCO, 2019). The OER recommendation is the 15th recommendation from UNESCO and the first and only one to date in the education sector. The recommendation is the result of more than a decade of efforts to bring together a wide range of stakeholders (UNESCO, 2019). The recommendation outlines five action areas, namely:

- Build capacity among stakeholders to create, access, reuse, adapt, and disseminate OER;
- Develop supportive policies for OER;
- Promote inclusive and equitable quality OER;
- Promote the creation of sustainability models for OER; and
- Promoting and strengthening international cooperation for OER.

OPEN SCIENCE

At the 40th session of the General Conference of UNESCO, 193 Member States tasked the organization with developing an international standardization tool for Open Science in the form of a UNESCO Recommendation for Open Science to be adopted by Member States in 2021. This groundbreaking document is an important step toward a world in which the exchange of science is open and inclusive (UNESCO, 2021). The recommendation defines shared values and principles for Open Science and identifies concrete actions for Open Access and open data, with proposals to bring citizens closer to science and commitments to facilitate the production and dissemination of scientific knowledge around the world. The recommendation is being developed through a regionally balanced, inclusive, and transparent multi-stakeholder consultation process. The UNESCO recommendation on Open Science complements the 2017 recommendation on Science and Scientific Research and also builds on the UNESCO Strategy for Open Access to Scientific Information and Research and the UNESCO recommendation on OER. The recommendation was developed through a

regionally balanced, inclusive, and transparent consultation process involving multiple stakeholders (Figure 1):

- A common definition for Open Science
- Core values and guiding principles for Open Science
- Recommendations for priority areas of Open Science actions

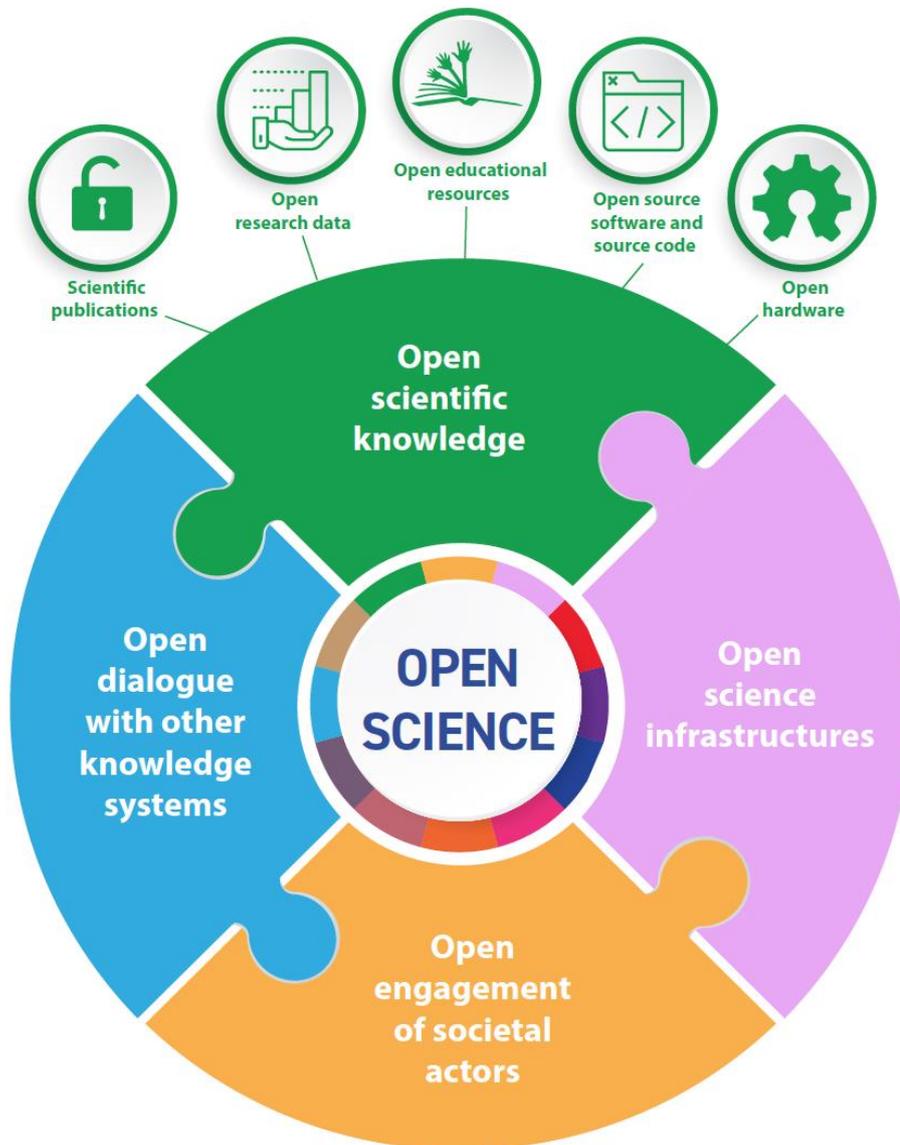


Fig. 1. [UNESCO Recommendation on Open Science](#). [CC BY IGO 3.0](#) (2021, p 11).

Open Science is defined by UNESCO (2021 p.7) as an:

... inclusive construct that combines various movements and practices aiming to make multilingual scientific knowledge openly available, accessible, and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation, and communication to societal actors beyond the traditional scientific community. It comprises all scientific disciplines and aspects of scholarly practices, including basic and applied sciences, natural and social sciences, and the humanities, and it builds on the following key pillars: open scientific knowledge, open science infrastructures, science communication, open engagement of societal actors and open dialogue with other knowledge systems.

Open Science's recommended actions are:

- Promote a shared understanding of Open Science, its associated benefits and challenges, and the various pathways to Open Science.
- Develop a favorable policy environment for Open Science.
- Invest in Open Science infrastructures and services.
- Investing in human resources, training, education, digital literacy, and capacity building for Open Science.
- Promote a culture of Open Science and align incentives for Open Science.
- Promote innovative approaches to Open Science at different stages of the scientific process.
- Promote international and multi-stakeholder collaboration related to Open Science and aimed at closing digital, technological, and knowledge gaps.

The question is how educators, businesses, learners, and civil society can benefit from Open Access, OER, and Open Science, and how innovative leaders and senior executives can lead with these three cornerstones of openness for resilient, sustainable, yet agile management of global challenges and for the benefit of learners in a global, uncertain future. It is important to point out that the COVID -19 pandemic brought many innovative experiences and cutting-edge advances as humanity began to use virtual environments and, with them, a variety of applications and tools to support professional practice.

THE ICDE OERAC OPEN LAB WORKSHOP

The ICDE OER Advocacy Committee (OERAC) hosted an Open Lab workshop at the 2021 ICDE Virtual Global Conference Week (VGCW) that addressed the question of how Open Science can support the design, implementation, and validation of formal, non-formal, and informal learning environments in innovative ways (e.g., using the term Open Innovation), Figure 2. In answering this question, as noted at the outset, we are moving from an academic approach to an integrated, stakeholder-based approach.



Fig. 2. Banner for the Open Lab workshop hosted by OERAC.

In line with current trends in Open Science, this collective work took place within the ICDE Open Lab. The goal was to produce a publication (read this publication), that serves as a guide and/or framework that can be further implemented at the individual and/or institutional level.

Key questions discussed by the ICDE OER Advocacy Committee and Ambassadors included:

- How can Open Science support the design, implementation, and validation of formal, non-formal, and informal learning environments in innovative ways (e.g., under the rubric of Open Innovation)?
- What are the key pillars of a proposed common framework for Open Science?
- What are the potential barriers to supporting Open Science and a proposed common framework?

Results from participants in the Open Lab Workshop 2021

BACKGROUND INFORMATION FOR THE PARTICIPANTS

Thirteen (13) persons from thirteen (13) countries participated in the ICDE Open Lab workshop during the ICDE Virtual Global Conference Week 2021 (VGCW2021). During the Open Lab, a short and concise open-ended mini survey was designed to capture participants' knowledge of how they understand and interpret the concept and practice of Open Science. During the workshop 11 participants participated in the activity and responded via the Padlet app immediately after each question was distributed.

More than half of the participants, 7 of 11, responded to the question at OER. Three indicated that they worked with OER on a daily basis, four conducted research in OER, and two individuals worked with OER at the policy level. Only two had no experience with OER. A much larger number, 8 of 11 people, responded to a question about Open Science. One person reported working with Open Science on a daily basis, and also only one person reported doing research in Open Science. Six of the participants had no experience with Open Science, while none of them had either worked with Open Science at a policy level or had ever heard of the concept.

Almost all participants, 9 out of 11, reported working in formal learning environments. Only one reported working in informal learning environments. None of them worked in non-formal learning environments or in other types of learning environments.

SHORT DESCRIPTION OF INDICATORS FROM THE RESULTS OF THE MINI SURVEY IN PADLET

1. How can Open Science support design, implementation, and validation of formal learning environments in innovative ways (e.g., under the term Open Innovation)?

Open Science is important for informal and non-formal learning: the definition may be different for different people and contexts.

Allows anyone to contribute to Open Science. Can also help improve formal learning programs. For informal learning, it helps to open up to research.

By doing open research with Open Science, results in transitioning and improving learning environments dedicated to open education.

It can support the formation of research groups and partnerships. Encourage the development of open products, disseminate, and develop knowledge.

2. How can Open Science support design, implementation, and validation of non-formal learning environments in innovative ways (e.g., under the term Open Innovation)?

Encourage the development of an open digital culture - learning paths, professional development materials.

By applying learning analytics approaches that demonstrate the effectiveness and impact of open education. This can be published in the form of academic papers.

3. How can Open Science support design, implementation, and validation of informal learning environments in innovative ways (e.g., under the term Open Innovation)?

In research, Open Science can be stimulated by funding the study - grants with recognition plaques and funds to support research initiatives.

In informal learning situations, Open Science can promote community development and education in environmental protection and conservation, solid waste management, and climate change, and advocate for openness by making people understand the concept.

Informal learning is key to Open Science, with an emphasis on integration with formal programmes and practical, non-accredited skills.

4. How can Open Science support design, implementation, and validation in any kind of other ways in innovative ways (e.g., under the term Open Innovation)?

Open Science is a term that may be used differently in some countries. Just like Open Access to publication, sharing of research results, etc.

Help raise awareness of openness and the importance of opening up all processes.

Use frameworks that can be executed with different levels of technology so that institutions can effectively use a framework with their technological resources.

Open data is just a slogan, it makes a small impact for research.

It is good for everyone.

5. What would you see as the main pillars of a common framework for Open Science?

include multiple stakeholders?

Include cross-disciplinary units of an institution (e.g., the library, the research ethics committee).

Include multiple stakeholders.

Aims and implementation.

Is very clear and also about promoting, fostering etc. What are the incentives, need to be obvious for each and everyone? Advocacy. Communication Channels.

Goals and implementation are very clear, and it is also about promotion, care, etc.

Definition Open Science is very clear as it reads.

A clear competency system, with core and functional approaches, so that Open Science can actively contribute from a practical perspective. So, theory combined with practical implementation.

The institutionalization of Open Science at the national level is a strong pillar for all academic institutions and all stakeholders who need to pool their resources to make it work.

Encourage... for life.

ECOsystem. See the ecosystem of openness, OS, OER, OA, etc.

6. What are the possible barriers to supporting Open Science and a possible framework Lack of skills and opportunities to open up their research and educational artifacts?

Lack of skills and opportunities to access their research and educational artifacts.

Open Science is quite a foreign thing in the Philippines, especially in our area. We have erratic internet connection. For Open Science to catch on in our country, there should be an awareness campaign and partnership with the corporate sector and the universities.

Outdated institutional research ethics policies that mandate the destruction of data instead of its preservation.

Outdated research ethics.

Raise awareness among those who need the resources most.

Establish communication channels that are easy to find and use so that information can be shared quickly and clearly.

Addressing cultural differences that may hinder open science initiative.

Policies and some restrictions in each country.

DISCUSSION

Open education can be defined as an important strategy for enforcing Open Access, OER, and Open Science. Open Lab participants confirmed the relevance of the UNESCO Open Science framework by recognizing strategies that fit within it. Open education is linked to Open Innovation, both providing access to knowledge, practices, and culture (Green & Gonsales, 2017).

The pandemic has taught us the importance of openness in all respects, not least in terms of Open Access, OER, Open Science and Open Innovation, but also for knowledge transfer and recognition in industry (Laine, Leino & Pulkkinen, 2015).

The term Open Innovation was coined by Henry Chesbrough in 2000, although it is an innovation trend that many large companies around the world are adopting as an action driven by multi-stakeholder engagement, transparency, and co-creation (Green & Gonzalez, 2017).

Open Innovation is a management model for innovation that encourages collaboration with people and organizations outside the organization. It supports the connection between multiple social and economic actors and provides many more opportunities for value creation, whether through new partners with complementary skills or by unlocking hidden potential in long-standing relationships and connecting educational institutions, government, the private sector, and civil society for the design, implementation, and validation of business models that work with open education (Sebriam & Gonsales, 2016).

For this connection to work, all stakeholders need a shared vision of knowledge and a broad understanding of its democratic access. Thus, the challenges of Open Innovation are a true cultural break with the silo mentality of business and the secrecy traditionally associated with corporate R&D culture.

This innovation model becomes viable when the company recognizes that there are many bright minds and greater knowledge outside the company. At that moment, the opportunity to attract these external people and/or companies becomes more real. Companies are implementing Open Innovation practices in a variety of ways, including inter-company alliances, college research chairs, crowdsourcing competitions, and innovation ecosystems.

Open Innovation thus has the potential to expand the space for value creation: it offers many more opportunities to add value to products and processes, whether through new partners with complementary skills or by unlocking hidden potential in long-standing relationships.

Open Innovation implies knowledge creation and innovation processes that are nonlinear and dynamic. This introduces barriers to application in Open Science, which is constrained by traditional and linear knowledge transfer (Laine, Leino & Pulkkinen, 2015), which is the main characteristic of closed innovation.

To promote Open Innovation, we have identified the need for a common framework that starts with Open Education and Open Science. Figure 3 provides a summary of the three key pillars of openness, i.e., Open Access, OER, and Open Science, and Figure 4 presents our proposed framework for Open Innovation.

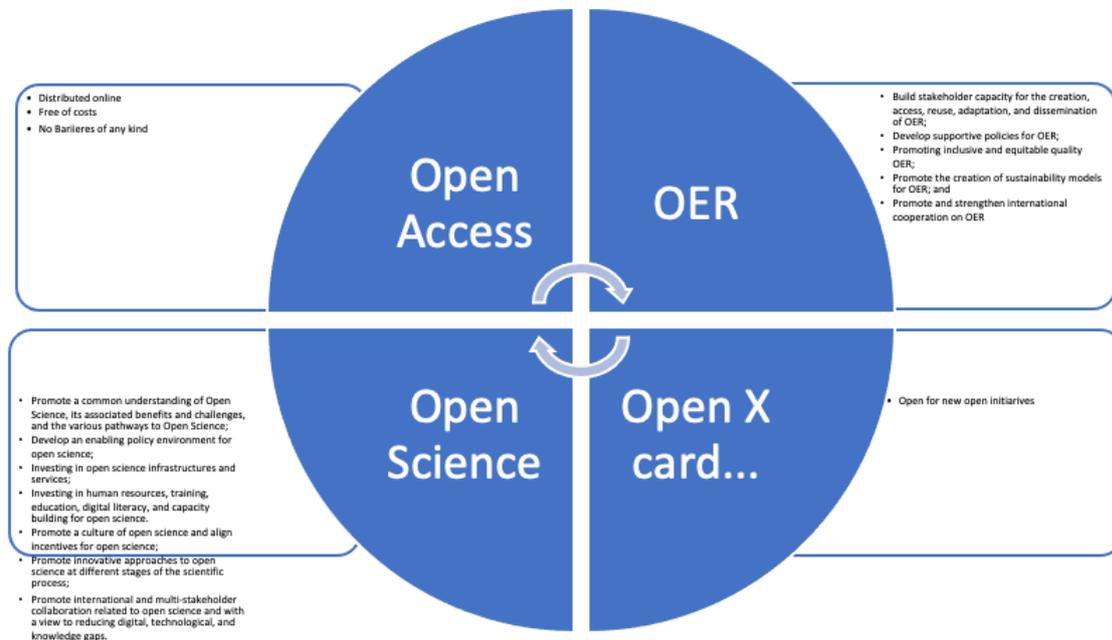


Fig. 3. Summary of the three core pillars on openness, i.e., Open Access, OER, and Open Science.

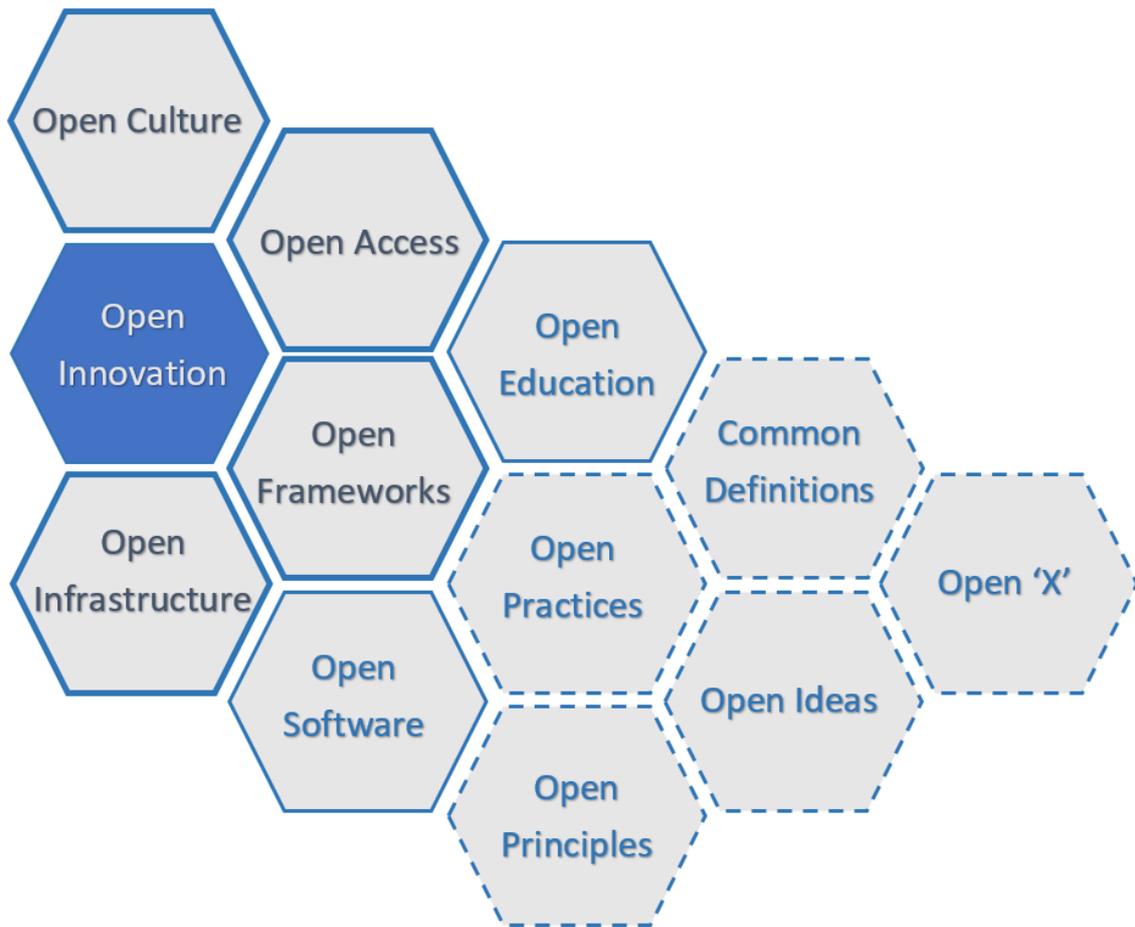


Fig. 4. Suggested framework for Open Innovation.

The framework draws on the three central pillars of openness discussed above, e.g., Open Access, OER, and Open Science. It is intended to provide the basis for understanding and action by all stakeholders.

CONCLUSION

With Agenda 2030 less than a decade away, critical thinking and urgent action are paramount if we are to achieve the Sustainable Development Goals. Higher education institutions are uniquely positioned to contribute to the social, economic, and environmental changes needed to solve the world's most pressing problems. This report from UNESCO on Knowledge-driven actions: transforming higher education for global sustainability (although published after our workshop) discusses in depth the role of higher education in implementing the 2030 Agenda, focusing on three interconnected themes (UNESCO, 2022):

- the need to move to inter- and transdisciplinary forms of knowledge production and dissemination.
- the need to become open institutions that foster epistemic dialogue and integrate different forms of knowledge; and
- the call for a stronger presence in society through proactive engagement and partnerships with other societal actors.

In the initiative, UNESCO, draws attention to the systemic barriers that have impeded change in these three areas to date and provides advice and examples of how this can be achieved. The report calls on higher education leaders and stakeholders to drive change at their institutions and to use the report's recommendations to critically reflect and act on their role in achieving the 2030 Agenda. Higher education institutions must take a stronger role in addressing the world's most pressing issues. This exceptional experience in supporting the development and implementation of face-to-face, distance, and blended educational programs in higher education will ensure continuous improvement in knowledge of theories, innovations in practical teaching, and assessment, in addition to educating and qualifying professional students in a variety of knowledge areas.

Both the OER and the Open Science recommendations represent a milestone in the field of openness worldwide. Both frameworks are central to the field of openness, along with other open movements and to achieve education for all, according to the UN UNESCO SDG4 Agenda for Education for All 2030, including accessibility, inclusivity, democracy, equity, justice, lifelong learning, and quality. Clearly, both recommendations are critical to communicating and implementing knowledge-based action: transforming higher education for global sustainability to achieve the SDGs and the 2030 Agenda. A differentiated moment in which both higher education institutions and education experts develop reference models, depending on the context, to meet the needs of researchers, teachers, and students.

Although the recommendation of Open Science was not well known among the interviewees, they mentioned promises and values for its implementation at all levels, meta, macro, meso, micro and nano. In addition, in both recommendations, they emphasized the importance of building capacity, raising awareness, and developing strategies at all levels-global, national, regional, local, and institutional.

The initiative for an Open Innovation framework was also welcomed, as it could be easier and more trustworthy to advocate and disseminate the core values and pillars of openness.

As a result of this exercise, we have some ideas for future work: we propose a diagnosis in order to implement:

- the concepts in people's minds,
- regional and national infrastructure and
- policy, in order to create an understandable framework.

These actions would allow us to formulate strategic and targeted recommendations.

Innovative organizations must work in partnerships and collaborations because a single organization cannot innovate in isolation, it will not be competitive; not in education, where the requirements of skills, market dynamics and training of people bring different types of needs.

The lessons learned should be used to derive actions and answers to crucial questions:

- What are the main turning points related to OER, Open Science and Open Innovation?
- What are the narratives we want to spread, and where is action needed?
- Mind, Meaning, and Matter, are the issues for systemic change at the national, institutional, and personal levels (Karen O'brien).

The stories we tell and how they are heard matter. How we communicate is as important as what we communicate.

Therefore:

Recommendation 1: Raise awareness to create legal frameworks and guidelines at the federal level to increase openness in government and public agencies. COVID-19 was a catalyst for increased use of OER worldwide, and how this can continue and become a standard for arts institutions should be addressed.

Recommendation 2: In collaboration with relevant international organizations, provide support to countries that adopt Recommendation 1. We believe there is an urgent need to create a legal framework and policy that promotes openness at various levels.

Recommendation 3: Create an incentive structure for companies, institutions, and individuals to create OER and open repositories. We have recognized that the driving forces of the market make private institutions and scientific companies reluctant to advocate for openness and promote OER widely. Therefore, regulatory frameworks and incentives should emphasize the benefits of Open Science collaboration and innovation.

Recommendation 4: Translations and contextualization, are essential for implementation and integration of Open Innovation.

Recommendation 5: Update institutional documentation to ensure inclusion of the three cornerstones. The three cornerstones require an operational environment that encourages the creation, practice, and use of OER, Open Science, and Open Innovation. Therefore,

educational, and scientific institutions are encouraged to review their policies and strategic documents to incorporate a philosophy of openness that will, in due course, enable the implementation of the recommendations of UNESCO OER, Open Science, and Open Innovation.

Therefore, we recommend colleagues and/or institutional entities to:

1. communicate the UNESCO initiative on knowledge-based action: Transforming Higher Education for Global Sustainability in the ICDE Global Advocacy Campaign.
2. OER, Open Science and Open Innovation to be included in the ICDE Global Advocacy Campaign and normative documentation.
3. embed the core and key tasks of UNESCO initiatives, such as SDG Agenda 2030, Futures of Education, "post COVID" in ICDE documentation and websites.
4. encourage ICDE member countries to develop projects on regional Open Innovation frameworks through collaboration and partnership with institutions, societies, and stakeholders.
5. to empower OERAC to work closely with member institutions in the education sector in adopting an open philosophy and creating strategic documentation.
6. create a training program on OER, Open Innovation and Open Sciences involving ICDE members and the community.
7. Establish quality assurance, monitoring and evaluation mechanisms to measure expected impact.

In summary, the main points and suggested applications are to:

1. review the mission and policies of higher education institutions as well as education professionals (researchers, professors), align them with the recommendations of the 2030 Agenda and design the application of Open Innovation, Open Science, and open educational resources in light of institutional priorities and requirements.
2. work in a task force to promote and identify partnerships, in addition to promoting digital curation when possible.
3. design and develop professional training to support education professionals (managers, researchers, teachers) as a baseline and intermediate reference model for Open Innovation, Open Science, and Open Educational Resources based on global experience.

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