Let's Get Practical! Two Frameworks to Improve Practices of Open Education

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ABSTRACT

In our Open Educational Resources (OER) advocacy work, we have encountered various challenges considering formulating a vision and policy on Open Education and implementing these visions and policies. Among these issues are a lack of proper definitions and terminology and lack of support for formulating and implementing a vision and policies for Open Education. To tackle these issues, two frameworks are proposed. One framework addresses the categorisation and definition of learning materials (including OER) within an educational ecosystem, emphasising the importance of distinguishing various types of resources. The other framework is meant to support defining a vision on Open Education in a specific context, bridging instrumental characteristics with value-driven goals. Several use cases are described to illustrate practical use of these frameworks. Both frameworks should provide clarity and practical guidance for stakeholders, from governments to individual educators, navigating the complexities of OER adoption and Open Education.

INTRODUCTION

Over the years, in our advocacy work for Open Educational Resources (OER), we have encountered various challenges such as creating awareness about OER, overcoming institutional barriers, fostering collaboration, or dealing with concerns about content quality. A crucial issue that has become increasingly important as more institutions and organisations are interested in OER and Open Education, are the "Why and How"-questions, relating to values of OER and Open Education. Why is it important for educational organisations and faculty to pursue the creation and use of OER, what utility and value does open education have, why should openness be pursued across the board, how do OER relate to other learning materials, is it necessary for all learning materials to be open?

Since Massachusetts Institute of Technology (MIT) started publishing their learning materials freely to everyone in 2001, this initiative has been massively adopted worldwide. UNESCO (2012) coined these learning resources in 2002 with the term Open Educational Resources (OER). In 2006, two open universities, in the UK and in the Netherlands, initiated a new wave by making part of their course base available as OER. These open universities' learning materials are specifically designed for independent learning, putting the learner in the center. The two open universities combined their "classical openness" (open entry, freedom of time, pace, and place, open programming, and open to all people) with the new "digital openness", in particular with OER (Mulder & Janssen, 2013). The combination of the classical Open university model with OER was seen as having significant potential to increase and widen participation in higher education (Carson et al., 2012).

The OER movement became part of the more comprehensive movement of Open Education. This movement was already in place for a longer time (Zawacki-Richter et al., 2020), but gained much attention when MOOCs became part of the educational field (Bonk et al., 2015). The term OER was still central in the 2012 Paris UNESCO OER Declaration (UNESCO, 2012). In subsequent years, the focus moved towards Open Educational Practices, Open Pedagogy and OER-enabled pedagogy (Cronin & MacLaren, 2018; Wiley & Hilton, 2018). This brief overview of the history shows that in the last 20 years, attention for Open Education has been shifted from an instrumental view on OER towards applying OER in a variety of open education practices.

We, the authors of this paper, have been involved in this OER development since 2004 while at that time working at the Open Universiteit Netherlands. After the first experiments at the Open Universiteit Netherlands, we got involved and are still involved in many other OER initiatives in the Netherlands and beyond, at the national, institutional and cross-institutional levels. We are also involved in many activities around adoption of OER, initiated by SURF, the cooperative association of Dutch educational and research institutions (https://www.surf.nl/en).

Teachers do not use exclusively OER in their daily practices, but they will strive for a mix of learning materials with an optimal fit with their learning goals and instructional design (Boyle, 1998). Questions we often get from teachers, supporting staff, management and board members of educational institutions are about how OER relate to other types of learning materials, and the necessity for all learning materials to be open. Also, with the shift towards applying OER and the broader interest in Open Education, we are confronted with questions about the importance of striving to create and use OER, the usefulness, visioning and values of open education, what open educational practices are, whether to strive for openness across the board, how the various terms and concepts are related, how to formulate and implement a vision on Open Education, and so on.

Much has already been published on the financial and social benefits of OER (Menzli et al, 2022; Hilton et al, 2014; Baas & Schuwer, 2020). However, we found that there is no unambiguous glossary for several other terms used in debates and projects. The UNESCO Recommendation of OER provides a definition of OER but lacks a definition of both Open Education and learning resources (UNESCO, 2019). Because the Recommendation of OER aims at mainstreaming OER as one of the means to realise Sustainable Development Goal (SDG) 4 (access to quality education for everyone), currently many activities are geared to the action plan of the recommendation. Lacking clear and accepted definitions of both learning resources and Open Education has the risk of hampering the developments because of misinterpretations between several stakeholders.

These observations lead to the following research objective:

> Develop supporting frameworks to describe OER in an ecosystem of learning materials and to discuss, develop and implement a vision on Open Education.

In this paper, we present the development of both frameworks. First, we propose a framework for describing OER, as part of an ecosystem of different types of learning materials and define the different types of learning materials within this framework. Next, we analyse some views on Open Education in order to construct a framework as tool for defining Open Education for specific stakeholders. This tool will be illustrated with suggestions for use cases. Both frameworks are developed from the viewpoint of the reflective practitioner (Schön, 2017), reflecting on our experiences with challenges, successes, and failures in promoting and advancing OER and open education in the Netherlands.

A FRAMEWORK FOR DEFINING LEARNING MATERIALS

Our approach begins by providing a definition of learning materials (learning resources, educational resources). These we define as content in any format, (textual, visual, auditory, or a mix of these forms), used for educational purposes (Janssen & Van Casteren, 2020). In the remainder of this paper, the terms learning material, learning resource and educational resource will be used and are considered synonyms.

In (UNESCO, 2019), Open Educational Resources are defined as 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. This definition describes the two characteristic features of OER: free access and rights for reuse, revision, remix, redistribution and retain, known as the 5R rights (Wiley, n.d.). The "Right to retain" is missing from the UNESCO definition, but is a logical consequence of the other rights mentioned. To make exercising your rights practically possible, a necessary condition is that the resources may be downloaded and stored locally.

Both characteristics, *Access* and *Rights for adaptation*, define a two-dimensional framework in which the different types of learning materials can be categorised and defined:

1. Accessibility
   - Free, no restrictions (open access), for everyone
   - Free, non-financial restrictions, for everyone. In many cases, non-financial restrictions mean the need for creating a free account to login for accessing the learning materials, where everyone can create such an account. Most MOOCs classify in this category.
   - Free, non-financial restrictions, not for everyone (walled garden). In most cases, an account is needed to login for accessing the learning materials, but not everyone can create such an account. An example is when learning materials are available on an intranet of an educational institution and an institutional account, only available for students and employees.
   - Non-free, financial restrictions. Access to learning materials is only possible after paying an amount of money.

2. Adaptation Rights
   - Adaptable (users have permission to adapt)
   - Non-adaptable (users have no permission to adapt)

In many cases, adaptation rights come with certain requirements, such as those prescribed by Creative Commons licenses. The dimensions Accessibility and Adaptation Rights span a framework, as shown in Figure 1.

In addition to the definition of OER, other types of learning materials can now be defined, in the terminology of this framework. **Semi-open** resources are learning, teaching and research materials in any format and medium that reside in the public domain or are under
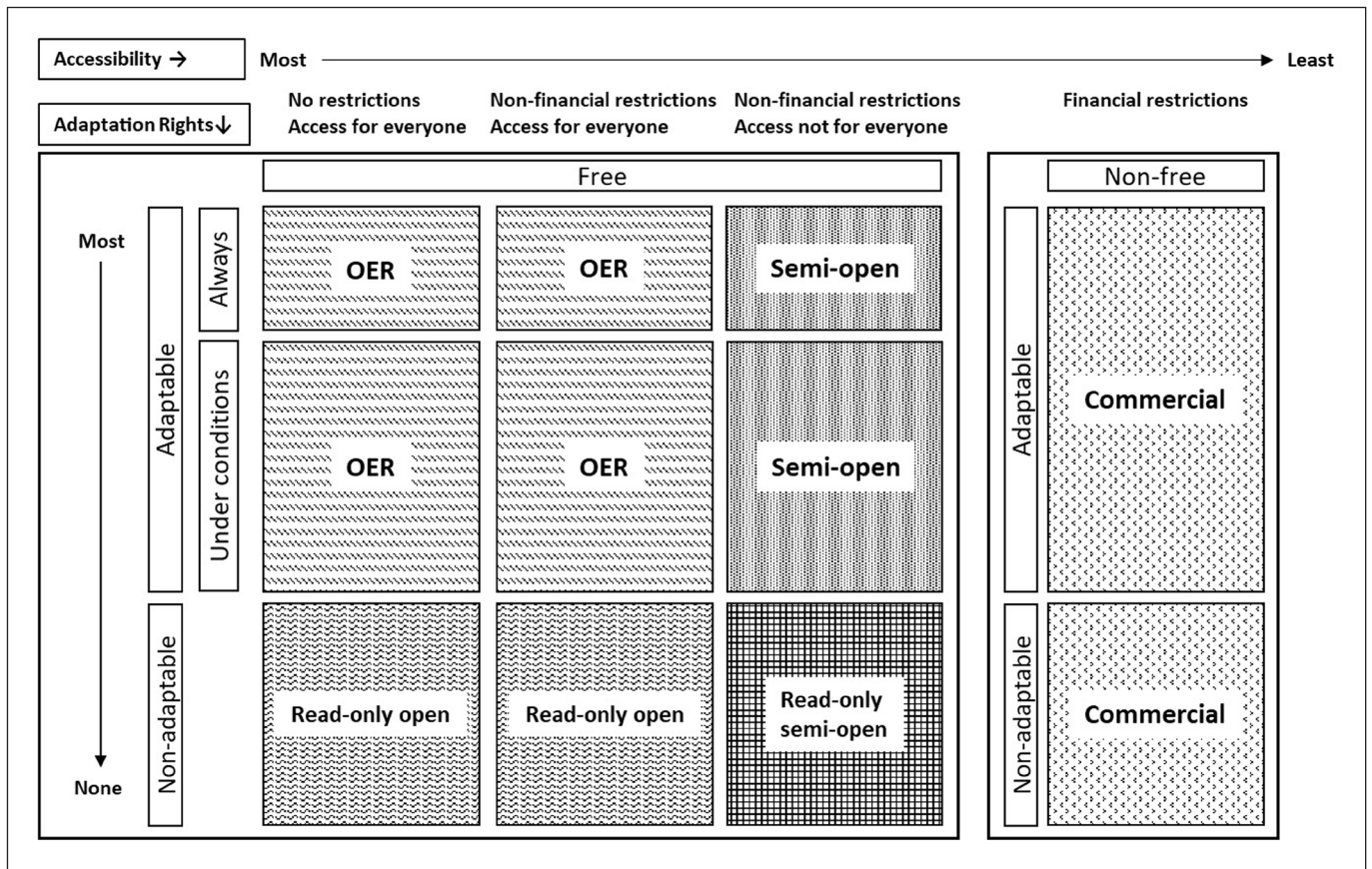
copyright, that permit no-cost access to a limited group of persons, and eventually licensed in a manner that provides everyone in this group with free and perpetual permission to engage in the 5R activities, be it with the restriction that redistribution happens only within the limited group. **Read-only open** resources are learning, teaching and research materials in any format and medium that permit no-cost access to everyone, but that do not permit repurpose, adaptation and redistribution. **Read-only semi-open** resources are learning, teaching and research materials in any format and medium that permit no-cost access to a limited group of persons, but that do not permit repurpose, adaptation and redistribution. And lastly, **commercial** resources are teaching, learning, and research materials in any format and medium that are only available under financial restrictions. This category can further be divided into commercial learning resources with or without profit objective (Bunk et al, 2023). An example of the latter occurs when, for example in vocational education, learning materials are developed together with industry, after which the materials are offered at cost price.

Apart from the (Read-only) open and (Read-only) semi-open types, the term **Closed resources** is often used: learning, teaching and research materials in any format and medium that are unavailable for a person or a group of persons. This definition is dependent on the perspective of the person. As an example, semi-open learning resources, accessible for a group, appear to be closed for persons outside of that group.

The value of this framework with categorisation of types of learning materials is being instrumental in making teachers more conscious in compiling their optimal mix of learning materials. Searching can in many cases be extended to searches for read-only open sources for those materials that do not require adaptation. Moreover, it can make teachers aware to start sharing their learning materials in a semi-open format, in a trusted environment, thereby increasing their confidence, and thus willingness to promote open sharing for all at a later stage. In teacher development programmes, the framework can be used to illustrate the Read-only open category as being the standard for websites ("All rights reserved"), unless the website specifies otherwise. This may significantly reduce copyright infringement.

TOWARDS A PRACTICAL FRAMEWORK FOR DEFINING OPEN EDUCATION

Many attempts have been undertaken to come to a definition of Open Education. Here are some exemplary examples.

The Cape Town Open Education Declaration (2008) characterises Open Education as providing everyone the freedom to use, customize, improve, and redistribute educational resources without constraint, and mentions the role of open technologies for facilitating collaborative, flexible learning and the open sharing of teaching practices. Lastly, open education is meant to include innovations on assessment, accreditation and collaborative learning.

Based on more than 50 individual narratives about Open Education, Bozkurt et al (2023) characterize openness in education as a multilayered concept, based on a wide array of values, like sharing, access, flexibility, affordability, individual agency, sustainability, collaboration, co-creation, social justice, equity, inclusivity, decolonisation, and respect for diversity.

Zawacki-Richter et al (2020) assert that open education refers to a set of educational practices, initially aimed at increasing access to education, supported by media, learning resources and other means to increase flexibility, but open education also involves practices like giving learners more agency, autonomy, and responsibility, with a specific focus on online networked learning.

These three examples illustrate how Open Education, where the initial goal is to broaden access to education, has been extended to a wide range of goals and values. We observe this development in other sources defining Open Education: (Atenas et al, 2020; Bali et al, 2020; Bozkurt et al, 2019; Cronin, 2017; Inamorato dos Santos et al, 2016; Jordan & Weller, 2017; Miao et al, 2019; NPOS, 2022; Sloep & Schuwer, 2016).

From these attempts, we can conclude that formulating an unambiguous and widely accepted definition for Open Education is difficult, perhaps not even possible. Another observation is that the common denominator for Open Education is about widening access to knowledge by removing barriers. In our consulting practices, however, we have found that this definition of open education is too broad for practical use. However, a shared definition is needed and necessary to create a shared understanding, starting point and goal in vision and strategy development.

Mulder & Janssen (2013) have suggested a practical approach for defining Open Education in the context of an institution with their Five Component Open Education (5COE) model. In this model, they distinguish between elements on the supply side and on the demand side. The supply side contains three elements:

1. OER
2. Open Learning Services (OLS), which are a variety of online and virtual facilities for tutoring, advice, meetings, communities, teamwork, presentations, testing, examination, consulting sources, internet navigation, et cetera, and
3. Open Teaching Efforts (OTE), which are the efforts of teachers, instructors, trainers, developers, and support staff in their various roles, in a professional, open, and flexible learning environment and culture.

The demand side has two elements:

4. Open to Learners' Needs (OLN), which refers to not imposing restrictions in terms of entry requirements, time, place, pace or programme, and provisions for lifelong learning, certification of practical experience, good links between formal and informal learning, et cetera, and
5. Open to Employability & Capabilities development (OEC), which means open to a changing society and labour market, the defining role of knowledge and innovation, and the influence of globalisation, while at the same time providing space for new skills, critical thinking, ethics, creativity, and personal growth and citizenship.

To implement Open Education in an institution, the level of openness for each of these components should be determined to create an institutional vision on Open Education.

Mishra (2023) has suggested a similar approach for defining an institutional vision on Open Education. He distinguishes ten elements comprising Open Education: Entry requirements, Study location, Time of learning, Curricular flexibility, Pedagogical approach, Technology use, Learning resources, Assessment approach, Recognition of credentials and Cost of education. These characteristics contain both the more "classical" forms of openness and the forms of openness made possible by digitisation.

An institution should determine the desired level of openness on each of these elements to create an "open profile", ultimately leading to a "score on openness". Mishra illustrates this with a hypothetical example, displayed in Figure 2. In this figure, the middle column shows the ten characteristics. Each characteristic has a scale running from completely non-open (left column) to completely open (right column). These scale descriptions also illustrate that for each of these characteristics, the term "open" has its own interpretation. For example, open for the characteristic "Entry" refers to who is allowed to enter the educational program, while open for the characteristic "Pedagogy" refers to the level of agency for a learner.
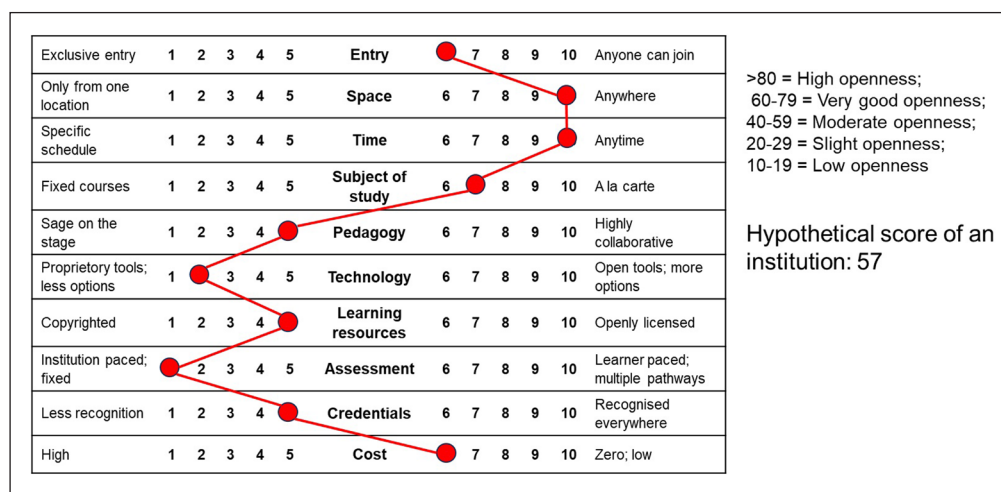

Figure 2 Hypothetical example of applying the framework of Mishra.

Note. From (Mishra, 2023, p. 6).

A closer analysis of the characteristics of Open Education mentioned in the literature and the approaches from Mulder & Janssen (2013) and Mishra (2023) reveal that there is no clear distinction made between the values and goals to strive for and the (open) instruments to realize these values and goals. A common design principle is that selecting or developing the right instruments depend on the goals that have to be met (Chandler, 1962; Miao et al, 2019). Therefore, to support development of a vision and policy on Open Education and its implementation, the characteristics of Open Education must be divided into two categories:

1. **Value-driven** and/or **goal-setting** characteristics: descriptions of the values to strive for, the goals to realise and the way education is designed to be considered a form of Open Education. Examples of these are values and goals such as flexibility, affordability, inclusiveness, decolonisation, widening participation, equality and diversity. In the remainder these characteristics will be referred to as value-driven characteristics.
2. **Instrumental** characteristics: elements to realize the value-driven characteristics. Examples are OER, MOOC, open badges, open networks and the more classical freedoms of time, place, pace, program and open admission.

In this division, instrumental characteristics are considered a means (the "How") to achieve value-driven characteristics (the "Why and What"). In our approach, instrumental characteristics follow from value-driven characteristics. Values are essential in public education organisations because they provide a guiding framework, contribute to a sense of purpose, influence decision-making, shape organisational culture and facilitate stakeholder engagement (Waslander, 2021). Selecting the appropriate instrumental characteristics for a specific situation requires, first, formulating the values or goals to strive for with Open Education.

The approaches presented by Mulder & Janssen (2013) and Mishra (2023) do not establish a clear link between the two categories. In the 5COE model, the demand-side elements are the value-driven characteristics, while the supply-side elements are the instrumental characteristics. However, the model does not explicitly connect these two categories, which

makes it difficult to justify the choices for the instrumental characteristics. The same applies to Mishra's framework, as it consists only of instrumental characteristics. However, being able to connect both types of characteristics is of great strategic importance. One of the barriers to teachers' adoption of OER is that insufficient answers are given to their legitimate 'why' questions (Schuwer & Janssen, 2018).

To connect these two categories of characteristics, both categories can be grouped into a framework as shown in Figure 3. In most current definitions of Open Education, OER is considered a necessary instrumental characteristic. We have added MOOC as an instrumental characteristic because of its impact it had and still has on opening education (Bonk et al, 2015). Some MOOCs are OER, but in the terminology of the framework in Figure 1, many MOOCs classify as Read-only open learning material. To improve the clarity of the table, the value-based characteristics are grouped into subcategories.

Instrumental → Value-driven ↓	OER	MOOC	Open badges	Open networks	Freedom of time	Freedom of place	Freedom of pace	Freedom of program	Open admission	…
Education and innovation										
Improve quality of education										
Pedagogic innovation										
Process improvement										
Increase efficiency										
Increase collaboration										
Marketing										
Widening participation										
Enhance flexibility										
Attract lifelong learners										
Attract new groups (such as foreign students)										
Social and moral values										
Increase affordability										
Enhance inclusivity										
Increase decoloni-sation										
More equality										
More diversity										
Share resources paid by taxpayers										
….										

This framework can be used at macro level (governments, groups of institutions), meso level (institution) and micro level (faculty and teachers) for defining their vision on Open Education. This presuppose a process of arriving at a vision, in which first the value-driven or goal-setting characteristics are articulated, before a selection of instrumental characteristics is assembled to realise the values and goals.

To support an evidence-informed process of developing a vision or policy on Open Education, claims, good practices and lessons learned can be added into the cells of the framework. This way, it becomes clear which instrumental characteristics contribute towards realising value-driven characteristics. An illustrative example is given in Figure 4. The numbers in the cells refer to the following list of references, where the X indicates a claim.

Figure 3 Framework to define Open Education in a specific context (Source: authors).

Instrumental → / Value-driven ↓	OER	MOOC	Open badges	Open networks	Freedom of time	Freedom of place	Freedom of pace	Freedom of program	Open admission	...
Education and innovation										
Improve quality of education	X, 7	X, 7								
Pedagogic innovation	1,2,3, 5, 9									
Process improvement										
Increase efficiency	X									
Increase collaboration	4, 5, 6		X, 7	6, 8						
Marketing	X	7								
Widening participation										
Enhance flexibility	X		X		X	X	X	X		
Attract lifelong learners	X	7	X		X	X	X	X	X	
Attract new groups (such as foreign students)	X	7	X	X				X	X	
Social and moral values										
Increase affordability	X									
Enhance inclusivity	3			3, 8						
Increase decoloni-sation	3, 5			3, 5, 8						
More equality	3		X	8						
More diversity	3			8						
Share resources paid by taxpayers	X	X								
....										

1. (Atenas et al, 2020)
2. (Cronin, 2017)
3. (Hodgkinson-Williams & Trotter, 2018)
4. (Baas et al, 2022)
5. (Hodgkinson-Williams & Paskevicius, 2012)
6. (Versantvoort & Schuwer, 2023)
7. (Inamorato dos Santos et al, 2016)
8. (Bali et al, 2020)
9. (Clinton-Lisell, 2021)

Figure 4 Example of using the framework for Open Education (Source: authors).

Cells in the framework can have four types of content, illustrated with examples from Figure 4:

- Cells with only an "X": the intersection of column 'Freedom on place' and row 'Enhance flexibility' indicates that education with freedom of place may contribute to enhancing flexibility of education. However, it should be noted that this claim lacks supporting evidence from the literature in the list under the table.
- Cells with a number: the number 3 in the intersection of the column titled 'Open networks' and the row titled 'Enhance inclusivity' indicates that education through open networks can contribute to enhancing inclusivity. This claim is supported by evidence found in (Hodgkinson-Williams & Trotter, 2018).
- Cells with an "X" and a number: the intersection of column 'MOOC' and row 'Improve quality of education' indicate a claim that MOOC may improve quality of education, supported by (Inamorato dos Santos, 2016) (reference 7), but without evidence to support this claim.
- Empty cells indicate that no claim or evidence is available or known to us for a contribution of the corresponding instrumental characteristic to realise the corresponding value-based characteristic.

As UNESCO (2019) has advocated in its Recommendation, it is essential to collect systematic evidence of the instrumental and moral importance of open education in all its facets, on a global scale. Our framework may be a suitable tool for this, which may need to be adapted when used. Figure 4 can serve as a starting point for this. Open sharing of this framework, for example by a global organisation such as OEGlobal or UNESCO could support this use.

At national and international level, the framework can be used to choose the forms of open education with which desired improvements and innovations in teaching and learning can be achieved, such as better access to learning materials, improvement of collaboration among learners, improved quality of teaching and learning, or improved teacher development. At the meso level, an institution may use this framework to define its vision for Open Education, by selecting or formulating value-driven or goal-setting characteristics, followed by selecting the appropriate instrumental characteristics. The cells of the framework can be used to describe the justification of the selection for their specific context.

At the micro-level of a teacher or instructional designer, Open Education is often implemented as an Open Educational Practice (OEP) (Bali et al, 2020; Cronin & MacLaren, 2018). Open Pedagogy are those didactical and pedagogical approaches associated with these practices (Post et al, 2022). The value-based characteristics for Open Education thus also apply for OEP and Open Pedagogy. The framework can provide inspiration in designing open practices based on the values one wants to realise with these practices. In many cases, however, not all instrumental characteristics are available on the micro-level to use. For example, the decision to use open badges, open admission or freedom of program is often made at the management level of an institution. But this use of the framework may trigger a bottom-up discussion within an institution about the need to make more instrumental characteristics available (such as introducing open badges when a faculty wants to be more flexible in its programs by offering them to non-traditional students).

The heading of the last row and column in this framework ("….") indicate that there may be more characteristics than indicated. Specific use of the framework by teachers or institutions to describe or implement their version of open education, or new evidence may include characteristics, previously not recognized or experienced. An adaptable version of this framework is available at https://bit.ly/openedframework.

CONCLUSIONS

This paper introduces two frameworks that can guide both the process of arriving at a context-specific definition of Open Education. The framework for learning materials can raise awareness about the ecosystem of learning materials and the position of OER in it, leading, for example, to a more informed selection of learning materials by teachers. The framework for Open Education can raise awareness about the potential impact of (more) openness in education and enhance the adoption of more openness by explicitly linking instruments to values and goals, answering the 'Why more openness' question for stakeholders. Teachers may use this framework in designing their open practices, starting with formulating the values and goals they pursue.

Suggestion for further research and application is to enhance the framework for Open Education with more evidence, to address the current limitation of a small set of papers in the example. We recommend coordinated action, under the umbrella of the Action Plan from the UNESCO OER Recommendation, to expand, supplement and share this framework.

COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR CONTRIBUTIONS (CRediT)

Robert Schuwer: Conceptualization, methodology, formal analysis, visualization, writing—original draft preparation, writing—review and editing; Ben Janssen: Conceptualization, methodology, formal analysis, writing—review and editing. All authors have read and agreed to the published version of the manuscript.

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