

OER TRAINER'S GUIDE

V 1.1

Competency
framework
open educational
resources

Open
Educational
Resources

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Foreword

Since 2002, Open Educational Resources (OER) have been playing an increasingly important role in education worldwide. Due to their transformative potential, their ease of access and the values that they promote, they are the key to fulfilling the fourth sustainable development goal which aims to “ensure inclusive and quality education for all and promote lifelong learning”. The International Organisation of La Francophonie (OIF) is fully dedicated and firmly committed to promoting an open, free and inclusive education through OER.

In line with this objective and through its “Libres Ensemble” (Free together) campaign aimed at francophone youth, the OIF also seeks to use education as a safeguard against close-mindedness, fear and intolerance, all of which are fertile ground for violent extremism. In May 2015, standing before the international community gathered at the World Education Forum in Incheon, Michaëlle Jean, Secretary-General of La Francophonie, declared that “education is a weapon of mass construction!”. No efforts will be spared in our work to improve the quality of education by promoting values that are dear to La Francophonie, such as sharing, exchange and contributing to the common good.

OER enable us to do just that, for they have tremendous reach and are open to all. The OIF aims to fulfill its commitment to improve the quality of education and to help children and young people develop skills for community life through a variety of tools: the massive online open course “REL 2014 – Pour une éducation libre”, the action plan for OER, the Compendium of Skills in OER (2016), the IDNEUF meta-portal developed with the Agence Universitaire de la Francophonie (AUF) which aims to manage pedagogical resources and to promote openly available digital heritage resources in French, or more broadly through its digital strategy and the actions of the Directorate for Education and youth.

The OIF, together with the ministries of Education of its member countries, UNESCO, the Open Education Consortium, the Arab League Educational, Cultural and Scientific Organisation (ALECSO), the Université de Moncton, the African Virtual University and the Tunis Virtual University have been working relentlessly over the past three years towards developing francophone OER in order to increase equal opportunities, relevance and universal access to quality education. Tools and OER promoting togetherness are currently being developed and integrated in teacher training. These, together with the curricula and pedagogical resources all contribute towards reaching our goals.

This document aims to be a major tool that will enable training programmes to help teachers acquaint themselves with, use, create and share OER in order to foster quality teaching/learning in our education systems.

Adama Ouane
Administrator of the OIF

Forward for the publication “Open Educational Resources Competency Framework”

Open Educational Resources (OER) offers the potential to provide broader and more equal access to knowledge and educational opportunities by making quality and affordable educational resources widely available, at a time when education systems worldwide are facing growing challenges to improve the teaching and learning environment while managing costs.

The term OER was coined at UNESCO’s 2002 Forum on Open Courseware and designates any type of educational materials in the public domain or released with an open license that allow users to legally and freely use, copy, adapt and re-share educational content.

Over the last 15 years since its inception, OER has proven to be an effective tool for transforming education and supporting knowledge creation. Today, with the commitment of the International Community to achieve the 2030 Sustainable Development Goals (SDGs), and notably SDG 4 ‘Education’ which calls for “ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all”, it is even more urgent that the full potential of OER be harnessed.

OER enables countries, institutions and teachers to share quality education material widely; challenge teachers to incorporate digital technology into their courses and programmes; and enable students to access quality content in an autonomous manner.

In this regard; UNESCO has been working with its partners in IGOs, Governments and Institutions focusing on advocacy, policy and capacity building to advance the level of understanding and use of OER by educational decision makers worldwide.

This publication is timely in addressing a main challenge recognized by the international community in mainstreaming OER in educational systems -- the capacity of users to access, re-use and share OER.

For OER to be used and become an integral part of worldwide education systems, it is necessary that educational policy makers, educators, students and librarians have the capacity to be able to find, use, modify and share materials created under an open licenses. This includes ensuring that users have the necessary digital and media literacy skills to find/share/create/re-mix OER effectively.

This document, the product of the international cooperation between OIF, UNESCO, ALECSO , OEC and UVT, is an example of an effective partnership for sharing knowledge to support quality lifelong learning opportunities needed

This current publication is instrumental in supporting training to have the competencies for using OER - outlining exactly how to find, use, create and share openly licensed resources by stakeholders. It serves as a vital capacity building tool that can ensure that the educational community can quickly have the skills necessary to make OER an integral part of their professional practice. These are vital skills for ensuring that the innovations of OER are properly harnessed to bring forward the Sustainable Development Agenda.

Indrajit Banerjee
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Introduction

This publication is a companion guide for the framework of competences that teachers should demonstrate so they can adopt open educational resources (OER) and include them in their practices.

The OER competency framework for teachers was commissioned by the International Organisation of La Francophonie (IOF)'s Education and Youth Department and developed in autumn 2015 by a group of experts. It features five fields of competences that follow a logical progression in OER production:

1. becoming familiar with OER;
2. finding OER;
3. using OER;
4. creating OER;
5. sharing OER.

Each field contains abilities sub-divided in capabilities that the teacher should master so as to adopt OER, foster their emergence and participate in the international advancement of education, thus supporting the United Nations' Sustainable Development Goals (SDGs).

Field of competence 1

ABILITIES	CAPABILITIES
Field 1 – Ability 1	Capability 1
	Capability 2

ABILITIES	CAPABILITIES
Field 1 – Ability 2	Capability 1
	Capability 2

Fields of competence 2

ABILITIES	CAPABILITIES
Field 2 – Ability 1	Capability 1
	Capability 2
Field 2 – Ability 2	Capability 1
	Capability 2
Etc.	Etc.

This guide thus aims to identify the knowledge pertaining to each of the listed capabilities, so as to give the trainer a reference frame describing the knowledge and resources linked to each of the capabilities in the competency framework.

It is to be used together with Competency Framework V 1.0, dated April 2016.

Overview of the OER competence Framework

A framework is a tool for designing, structuring and harmonizing training content in a given field. It provides reference points to guide, set up and assess training in a targeted, functional manner. The OER adoption framework satisfies a training need for teachers who are anxious to use and develop these resources in their teaching activities.

This framework is based on a competence approach. A target profile is set, with corresponding competences that the learner should acquire. In its educational definition, a competence is the ability to mobilize and use an organized set of resources (cognitive, social and functional) that help to accomplish a certain number of tasks in similar situations.

According to the European Qualifications Framework, a competence is “the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development”. Competences are thus used in context, and mobilize not only associated skills and knowledge, but also the autonomy and responsibility of the person demonstrating them.

This framework was thus designed as a set of professional competences to acquire throughout a training course that takes two dimensions into account: education and technology. It contains a coherent set of competences necessary to find, reuse, design and disseminate OER. Examples of activities are given to help the user of the framework achieve each goal, and for each competence, types of media linked to the uses of OER are suggested. Given the evolving nature of educational knowledge and technologies, the activities and media must be constantly updated.

Finally, it should be specified that prior to using this framework, two basic computer skills should be mastered:

- working in an evolving digital environment;
- producing, processing, using and disseminating digital documents.

Field of competence D1. Becoming familiar with OER

ABILITIES	CAPABILITIES
D1.1 Distinguish an OER from another resource	1. Define an OER in your own words
	2. Citer les caractéristiques essentielles d'une REL
D1.2 List some factors in the emergence of OER	1. Describe the place of education in the Sustainable Development Goals (SDGs) of the United Nations
	2. Identify the actors and triggers that have made OER possible
D1.3 Consider a specific role in the OER movement	1. Identify the "5 Rs" that characterize a copyright-free resource
	2. Determine what your contributions could be to the OER movement

Field of competence D2. Searching for OER

ABILITIES	CAPABILITIES
<p>D2.1 Use a search tool to find OER</p>	<p>1. Understand the meaning of the various terms “bank”, “deposit”, “directory” and “repository of resources”, and be able to recognize them as the source of an OER</p>
	<p>2. Search for OER on the Internet with simple and advanced search mechanisms by manipulating the search parameters in order to modulate the search results of OER as required</p>
	<p>3. Know the major OER repositories and be able to specify those that are the most suited to your needs</p>
	<p>4. Understand the role played by the standardization of metadata in the interoperability of banks</p>
<p>D2.2 Select appropriate OER</p>	<p>1. Know the quality criteria of an OER</p>
	<p>2. Know the validation mechanisms of the quality of OER</p>
	<p>3. Identify some of the key data in order to correctly attribute an OER</p>
	<p>4. Recognize a licence and know how to determine whether a resource has one</p>

Field of competence D3. Using OER

ABILITIES	CAPABILITIES
<p>D3.1 Distinguish between the different types of Creative Commons licences</p>	<p>1. Set out in simple terms the comparative advantages offered by Creative Commons licences</p>
	<p>2. Understand the exceptions to the laws of intellectual property and name at least two that apply in teaching</p>
	<p>3. Identify the four basic options for Creative Commons licences, know their initials and explain their meaning</p>
	<p>4. Identify at least one of the reasons given by those who oppose the licensing system</p>
<p>D3.2 Respect the terms of Creative Commons licences</p>	<p>1. Use a resource licensed under the Creative Commons licensing system</p>
	<p>2. Demonstrate understanding as applied to the Creative Commons licensing system</p>

Field of competence D4. Creating OER

ABILITIES	CAPABILITIES
<p>D4.1 Design OER</p>	<p>1. Produce original or reusable content that can be assembled into a work that may be licensed to become an OER</p>
	<p>2. Know the right practices to design resources that take into account the educational and cultural dimensions of the resource, its technical quality and ergonomics as well as basic concepts in order to ensure its discovery and accessibility</p>
<p>D4.2 Revise OER</p>	<p>1. Be able to identify and distinguish a modifiable OER in open format (in particular by ensuring the original design format is available)</p>
	<p>2. Know the different options for adaptation of an OER (translation, sound, illustration, accessibility, contextualization, etc.)</p>
<p>D4.3 Remix OER</p>	<p>1. Know how to create an OER comprising various OER taking into account the specificities of licences and their potential for dissemination</p>
	<p>2. Know how to create an OER comprising various OER and content that is not open within the constraints associated with this type of composite work and specifying the rights associated with the individual content</p>
<p>D4.4 Co-create OER</p>	<p>1. Distinguish between the different modes of co-creation in order to use them wisely for the creation of OER</p>
	<p>2. Identify the contributors involved in the creation of OER by establishing and clearly stating each of their levels of contribution and their intellectual property</p>

Field of competence D5. Sharing OER

ABILITIES	CAPABILITIES
D5.1 Choose a licence for an OER	1. Select an appropriate licence for your OER
	2. Recognize which licences are less suitable for reuse when several of them are combined
D5.2 Assign a licence to an OER	1. Assign a Creative Commons licence to a resource
	2. Demonstrate best practices in the attribution of authorship, for both the authors of the OER and for your own creations
D5.3 Publish an OER	1. Use an OER within its information envelope and its licence to ensure usability
	2. Make your resource available in every way possible
	3. Identify the major OER repositories in which OER creators can publish their creations
D5.4 Promote an OER	1. Understand the lifecycle of a resource
	2. Use social networks to publicize OER
	3. Identify communities of practice to discover and analyse the uses of OER

D1

Becoming familiar with OER

ABILITIES	CAPABILITIES
D1.1 Distinguish an OER from another resource	1. Define an OER in your own words
	2. Citer les caractéristiques essentielles d'une REL
D1.2 List some factors in the emergence of OER	1. Describe the place of education in the Sustainable Development Goals (SDGs) of the United Nations
	2. Identify the actors and triggers that have made OER possible
D1.3 Consider a specific role in the OER movement	1. Identify the "5 Rs" that characterize a copyright-free resource
	2. Determine what your contributions could be to the OER movement

D1.1 | Distinguish an oer from another source

What is an OER? How does it differ from other teaching and learning resources? This first section features two capabilities that will help the teacher answer these questions. First, we examine the definition of OER through the events that encouraged their adoption. Next, we consider the different aspects of the definition so as to gauge their exact nature.

D1.1.1 | Define an OER in your own words

The term "OER" was first pronounced at the Forum on the Impact of Open Courseware for Higher Education in Developing Countries¹ which was organized by UNESCO and held in Paris in June 2002. The event gathered an eclectic group of university researchers and

1• See <http://unesdoc.unesco.org/images/0012/001285/128515e.pdf>

experts from the Commonwealth of Learning, the Andrew W. Mellon Foundation and the William and Flora Hewlett Foundation, among others. These pioneers had already agreed that sharing knowledge was essential to universal access to education; they then declared that free access to education was a human right.

“As the session drew to a close, [...] [p]articipants [...] ‘express their satisfaction and their wish to develop together a universal educational resource available for the whole of humanity, to be referred to henceforth as Open Educational Resources.’”²

The concept of ‘OER’ thus extended that of “learning object” (LO), which has been translated in various ways and elicited numerous interpretations in the last decade.

The concept of “learning object” (LO) gave rise to many nationwide Canadian research projects, particularly the EduSource and LORNET projects. This research into technology and teaching was mainly conducted by universities and focused on the granularity (relative size), the vocation – some claim that learning objects must be entire lessons, from their goals to their assessment – and the description, nature and distribution (among LO repositories) of learning objects (LO). Dr Gilbert Paquette and his T luq (network of Universities of Quebec) team were world pioneers in the field, among French-speaking countries³.

It was not until the 2012 World Open Educational Resources (OER) Congress held in Paris that the true potential of OER was recognized and made official by the 2012 Paris OER Declaration. UNESCO introduced fundamental distinctions between OER and learning objects: OER are open, cost-free and unbound by intellectual property restrictions. All these distinctions are contained in the “open” of OER.

2012 Paris OER Declaration

Preamble

Mindful of:

The Universal Declaration of Human Rights – “Everyone has the right to edu-

2• UNESCO press release announcing the adoption of the 2012 Paris OER Declaration: www.unesco.org/new/en/communication-and-information/resources/news-and-in-focus-articles/in-focus-articles/2012/open-educational-resources-congress-passes-historic-declaration/

3• Gilbert Paquette, professor at the T luq: www.telug.ca/siteweb/univ/gpaquett.html

ation”; the International Covenant on Economic, Social and Cultural Rights; the 1971 Berne Convention for the Protection of Literary and Artistic Works and the 1996 World Intellectual Property Organization (WIPO) Copyright Treaty; [...]; the 2003 UNESCO Recommendation concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace...

Definition

Emphasizing that the term Open Educational Resources (OER) was coined at UNESCO’s 2002 Forum on Open Courseware and designates “teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.”

The Paris Declaration

Recommends that States, within their capacities and authority:

- (a) Foster awareness and use of OER.*
- (b) Facilitate enabling environments for use of Information and Communications Technologies (ICT).*
- (c) Reinforce the development of strategies and policies on OER.*
- (d) Promote the understanding and use of open licensing frameworks.*
- (e) Support capacity-building for the sustainable development of quality learning materials.*
- (f) Foster strategic alliances for OER.*
- (g) Encourage the development and adaptation of OER in a variety of languages and cultural contexts.*
- (h) Encourage research on OER.*
- (i) Facilitate finding, retrieving and sharing of OER.*
- (j) Encourage the open licensing of educational materials produced with public funds.*

D1.1.2 | List the essential characteristics of an OER

Using the definition given in the Paris Declaration, let us examine the characteristics of OER more attentively.

What?

OER are, first and foremost, teaching, learning and research materials. As well as the decidedly educational context, this implies an important difference in perspective between teachers and learners: teachers use OER to teach while individuals use them to learn. These

different positions suggest different motivations, which undoubtedly influence how teachers and learners consider the nature of OER.

When OERs are used to teach, they are generally more targeted and specialized. This implies the possibility of a specific public – pupils of a certain level, for instance – a precise sphere of knowledge and a specific teaching approach, whether this is an educational strategy (such as active or flipped learning) or a presentation of the OER (goals, resources, activities, evaluations).

The learner's context, on the other hand, is far broader. In formal education, the academic level and individual conditions imply many degrees of autonomy, from the lowest to the highest. The learning context is also more formal, because educational resources can be dictated by the competent academic authority.

However, in formal education, resources used in learning activities, personal projects and individual research that are not subject to prior approval can be considered educational and free, or, at the very least, open. The learner benefitting from professional or lifelong training is also confronted with such resources, which, while not specifically recognized by the training authority, are still valid.

The research context is broader still. In this case, it falls to the researcher and the scientist to determine the validity of an OER, using far more subjective criteria to gauge quality, specificity and reliability. Strictly speaking, OER are designed with a professional aim, for a specific public with specific learning needs. They are described and included in a specialized repository made available to a community of interest. This strict definition is thus most adapted to the perspective of the teacher or the less autonomous learner of formal education.

Inversely, broadly speaking, OER can come from the Internet and other truly diverse sources, provided that they are reliable and useful. Thus, Wikipedia, YouTube and Flickr resources are certainly not OER in the strict meaning of the term, but they can be used for educational purposes in a broader context. However, such resources can only be considered OER if they are included in a more extensive resource, with a precise educational approach. This broader definition reflects the conduct of learners searching for reliable sources of knowledge to provide them with food for thought.

“Open Access” refers to the major movement that liberated scientific publications. It emerged at the beginning of the millennium, especially in the United Kingdom and Australia; a detail that is important for members of the public searching for a definition of OER. The defenders of Open Access stood against the publishing firms and commercial interests that controlled access to scientific publications, and advocated for free, open access to all scientific and research papers subsidized by public and philanthropic interests, such as governments and foundations. Stevan Harnad⁴ remains one of the most active, best informed members of the movement.

Meanwhile, the Scholarly Publishing and Academic Resources Coalition (SPARC)⁵ is leading advocacy for free and open access to scientific resources in the United States, in close collaboration with Creative Commons (CC).

UNESCO adds a further idea to the range of interpretations on the nature of OER. OER can be published “in any medium, digital or otherwise”. This detail is reminiscent of one of the first debates on learning objects (LO), in which participants wanted OER to include physical objects such as models or scales as well as electronic files such as Flash animations. Nevertheless, our current preoccupation being the promise of access to flexible, quality education for all, the main focus will be on digital resources, both in the OER competency framework for teachers and this companion guide. In this respect, the IOF’s Education and Youth Department and its committee of experts on OER are in line with the Qingdao Declaration, which promotes the use of Information and Communications Technologies (ICTs) to achieve the educational targets of the United Nations’ new Sustainable Development Goals (SDGs)⁶.

Under what conditions?

When the Paris Declaration specified that an OER had to “reside in the public domain or have been released under an open license [...] with no or limited restrictions”, many fundamental distinctions and criticisms were added to what could, until then, have been considered an LO. Its signatories thus demonstrated that they endorsed the principles of open access. They took into consideration the important leadership of the Massachusetts Institute

4• Stevan Harnad on Wikipedia: https://en.wikipedia.org/wiki/Stevan_Harnad

5• SPARC: <http://sparc.arl.org>

6• Press release, May 2015, the Qingdao Declaration: www.unesco.org/new/en/education/resources/in-focus-articles/qingdao-declaration

of Technology (MIT) with its Open Courseware initiative. They invoked the provisions of the Creative Commons licensing system to establish reference points for access to resources, in the legal terms of their use. They also recalled that education was a fundamental right that should not be restricted by financial resources.

In the next section, we will broach the notions of public domain and copyright. We will then come back to the prescience exhibited by MIT⁷ authorities, which could be referred to as “planetary social conscience”, when they launched their Open Courseware initiative. In the field of competence D3, *Using OER*, we will also delve into the Creative Commons (CC) licensing system, which specifies permissions for using the resources.

For now, it shall be enough to know that copyright laws stipulate that creators of works, whatever they may be (photos, songs, drawings, films, stories), automatically have “all rights reserved” copyrights that protect their property from any use to which they do not explicitly consent.

In this context of global, automatic restrictions, even in the absence of the copyright symbol – ©⁸ – Creative Commons (CC) licences refine copyright rules so that they are better suited to the community, particularly since the rise of the Internet. They thus specify the uses that can be made of the resource. That is what is meant by the stipulation “with no or limited restrictions” in the definition of OER.

For what uses?

Finally, the core of the definition certainly resides in the passage stipulating that these licensed materials enable access, use, adaptation and redistribution by others. The two most important parameters of this provision are that a copy of the resource can be acquired without cost or expense, and that it can be redistributed for personal purposes, provided that the work’s authorship is cited. The other permissions – namely, the possibility of adapting OER and using them commercially – are refined versions introduced by licensing systems including Creative Commons.

7• In Boston, Massachusetts (United States).

8• It is important to note that in the absence of a licence mentioning the permissions granted for the use of a resource, the teacher must take for granted that it is proprietary, and that its author must consequently be contacted before it can be reused, adapted, remixed, redistributed or copied.

D1.2 | List some factors in the emergence of OER

Teachers seeking information on OER so they can better understand their potential and envisage including them in their practices should understand the context of their emergence. This will guide them in their personal values and professional context. The first capability comprised in ability 1.2, *List some factors in the emergence of OER*, is based on the great social and humanitarian issues tackled by the United Nations, which calls on Member States to help it to achieve its goals. Everyone can play a role in attaining these goals, as long as they know and adopt them. The second capability concerns the origin of OER, in terms of the actors and events that favoured their emergence.

D1.2.1 | Describe the place of education in the Sustainable Development Goals (SDGs) of the United Nations

OER serve the cause of free education. Since the United Nations established the Millennium (2000) Development Goals (MDGs)⁹, education has become increasingly important, so as to ensure worldwide prosperity, peace and safety for all.

However, access to education is still restricted by constraints such as distance and the availability of infrastructure and educational material. Quality education also depends, in several places, on a person's individual capacity to pay for it. Moreover, UNESCO estimates that the number of learners in the world will go from 99.4 million since 2000 to 414 million in 2030.

The year 2015 was particularly important for concerted planetary action, because it was the transitional year between the MDGs (2000-2015) and the new Sustainable Development Goals (SDGs – 2015-2030). Today, the OER movement is carried by the United Nations' SDG 4 (Figure 1)¹⁰, which aims to “ensure inclusive and quality education for all and promote lifelong learning”.

D1.2.2 | Identify the actors and triggers that have made OER possible

Long before the rise of the Internet and Information and Communications Technologies

9• www.un.org/millenniumgoals/

10• www.un.org/sustainabledevelopment/fr/2015/09/26/onu-appelle-contributions-secteur-prive



Figure 1. The United Nations' 17 SDGs (2015-2030)

(ICTs), copyright developed as an essential way for creators to protect the authorship of their works, thus preventing others from claiming and exploiting them.

The legal systems of *droit d'auteur* (in civil-law countries such as France) and copyright (in the common-law jurisdictions of English-speaking countries) thus gave creators a moral right on their works and a monopoly on their exploitation, which lasted a certain amount of time before they fell into the public domain. When a work belongs to the public domain, anyone can find inspiration in it and adapt and use it at will, and that free of cost, although the source should always be cited.

However, the notion of “public domain” varies from one country to another: the period stipulated before copyright or other provisions of rights such as moral rights run out¹¹. When it was established in the eighteenth century, the monopoly on exploitation recognized by intellectual property systems was limited to a dozen years or so. Over time, these monopolies have been extended so that nowadays, they last from 50 to 100 years depending on the country.

Since the beginning of the 1990s and the advent of the Internet, the situation has changed dramatically. The production chain that exists in analogue markets, from the creator (musician, author, inventor, etc.) to the distributor, requires a whole series of intermediary agents such as publishers, printers and retailers. However, once content becomes available

11• Wikipedia: https://en.wikipedia.org/wiki/Public_domain

online, suddenly, anyone can not only use it, but also adapt, reproduce and disseminate the digital content in their own name, and even profit from doing so.

In the United States, two laws were promulgated at the end of the 1990s to counter this bypassing of intermediary agents (or disintermediation) that is harmful to intellectual property and commercial earnings, and mobilize the advocates of the free circulation of ideas. These laws were the Sonny Bono Copyright Term Extension Act of 1997¹² and the Digital Millennium Copyright Act¹³.

The first extended the monopoly on copyright by 20 years in the United States, while the second applied protection measures to the digital sphere. The creative process, which has always fuelled innovation and progress, was consequently excessively threatened.

At the beginning of the 2000s, against the backdrop of restrictions on free digital circulation, two major events marked the desire of citizens of the Internet to free themselves from the increasing number of legal obstacles that, according to some, boosted the commercial interests of large corporations.

In 2001, the Massachusetts Institute of Technology (MIT) sent a shockwave through the sphere of university education by announcing its intention to offer all its courses in open access. At the same time, it set up OpenCourseWare¹⁴, a platform where all MIT courses were openly and freely available. This initiative, taken by one of the world's most prestigious and expensive institutions, caused a major stir in the sphere of education.

In parallel, in 2000, lawyer Lawrence Lessig of Stanford Law School¹⁵ founded the Creative Commons (CC) organization with colleagues James Boyle and Yochai Benkler¹⁶. In 2002, he published the CC licensing system, which stemmed from the need to overturn the universal

12• Wikipedia: https://en.wikipedia.org/wiki/Copyright_Term_Extension_Act

13• Wikipedia: https://en.wikipedia.org/wiki/Digital_Millennium_Copyright_Act

14• The OpenCourseWare "Our History" page (<http://ocw.mit.edu/about/our-history>) states that the OpenCourseWare Consortium was established in 2005 and that it was renamed Open Education Consortium (www.oeconsortium.org) in 2014.

15• In Stanford, California (United States).

16• See De Filippi and Ramade, 2013.

ban imposed by the intellectual property laws, and replace it with a permissions system informing users how they could use a creator's work.

Retrospectively, it is clear that both these events (MIT's OpenCourseWare and the creation of the CC licences) prepared the ground for the OER movement, particularly after the Paris Declaration in 2012, which enjoined the governments of the world to grant open licences to the teaching resources intended for the public and benefitting from State funding.

D1.3 | Consider a specific role in the OER

The aim of the OER competency framework is to involve teachers in the OER movement. Teachers interested in being involved must consider the range of activities offered by a resource and decide whether they will be granted the permission to implement them, and whether they have the ability and the commitment to do so.

That is why we will open this ability, concerning the role that teachers can play in the OER movement, with David Wiley's five permissions – or “5 Rs” – characterizing copyright-free resources. The second capability consists in an individual reflection to determine on what scale and by what means teachers could contribute to the development of OER.

D1.3.1 | Identify the “5 Rs” that characterize a copyright-free resource

In 1998, the well-known university professor and advocate for copyright-free content, David Wiley¹⁷, coined the expression ‘Open Content’¹⁸. He was a pioneer of the reflection on the restrictions that intellectual property had imposed on the Internet, and the importance of granting user licences to stimulate learning and creativity. He designed the Open Content and Open Publication licences before recognizing in Creative Commons (CC) a specialized initiative that was better placed for achieving his aims. He thus joined CC in 2003, as Director of Open Education¹⁹. “Open content” describes any copyrightable work that is licensed in a manner that provides users with free and perpetual permission to engage in the “5 Rs”,

17• David Wiley : <http://davidwiley.org>

18• Wikipedia: https://en.wikipedia.org/wiki/David_A._Wiley

19• Creative Commons press release, June 2003: <http://web.archive.org/web/20030806102812>

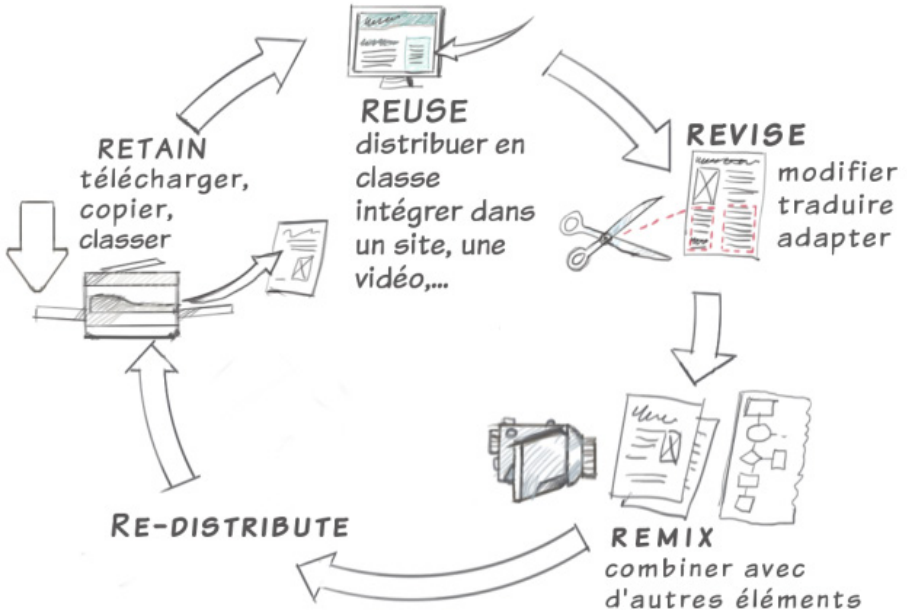


Figure 2. David Wiley's "5 Rs", represented by Frédéric Duriez (<https://didac2b.wordpress.com/2014/03/15/gilbert-paquette>). The "5 Rs" are the possible uses of a resource that, when allowed, make it a "free resource" (Open Content).

i.e., activities covering the range of a resource's usual uses²⁰

1. Reuse: the right to use the content in a wide range of ways (e.g. in a class, in a study group, on a website, in a video).
2. Revise: the right to adapt, adjust, modify or alter the content itself (e.g. translate the content into another language).
3. Remix: the right to combine the original or revised content with other material to create something new (e.g. incorporate the content into a mashup).
4. Redistribute: the right to share copies of the original content, your revisions or your remixes with others (e.g. give a copy of your content to a friend).
5. Retain: the right to make, own and control copies of the content (e.g. download, copy, store and manage).

²⁰• Wiley's "5 Rs" describing open content: www.opencontent.org/definition

These five permissions are at the very core of licensing systems. In such systems, rights holders (the authors of the resources) retain their authorship, but grant specific rights to the users of their resources, provided that they respect certain conditions. The most basic of these is citing the author and the source of the work.

D1.3.2 | Determine what your contributions could be to the OER movement

The revolution operated by the OER movement resides in the fact that all of us, pupils, teachers and other training professionals, are potential authors and creators. Each of our works has the potential to feature in a wider conversation, leading to the acquisition of knowledge, the evolution of ideas and innovation.

Moreover, as education is recognized as a fundamental human right and is thus generally subsidized by States and governments, its products should contribute to the free circulation of ideas and knowledge.

Consequently, following the logic of the United Nations and UNESCO, we invite teachers to think how they can adapt their practices to contribute to the emergence of the OER movement. While teachers acquire the competences described in the framework, they should reflect upon that to determine which practices are suited to their specific teaching contexts and how they can adapt their teaching approach to fuel the OER movement.

Communities of practice are most likely to create crucial amounts of resources that are truly suited to teachers' particular teaching contexts. Each community is also free to join other communities, or existing repositories, to share their resources and profit from existing infrastructure so as to better distribute their creations. We thus invite you to wonder about your own practice and how you can adapt it to contribute to an existing OER community as you learn about OER.

For now, this field of competence allows teachers to think about the teaching and learning resources they use to determine whether they could become OER; to analyse their practice to consider how they use their resources, and see if they could open it so others can benefit from it; and, finally, ask themselves about OER infrastructure, communities and repositories, which could exist in their circle without their knowledge, and which they may wish to

D1 Becoming familiar with OER

consider in the future. This first step towards open-mindedness in regard to intellectual property creates the conditions propitious to acquiring the OER competences described in the following four fields.

D2

Searching for OER

ABILITIES	CAPABILITIES
D2.1 Use a search tool to find OER	1. Understand the meaning of the various terms “bank”, “deposit”, “directory” and “repository of resources”, and be able to recognize them as the source of an OER
	2. Search for OER on the Internet with simple and advanced search mechanisms by manipulating the search parameters in order to modulate the search results of OER as required
	3. Know the major OER repositories and be able to specify those that are the most suited to your needs
	4. Understand the role played by the standardization of metadata in the interoperability of banks
D2.2 Select appropriate OER	1. Know the quality criteria of an OER
	2. Know the validation mechanisms of the quality of OER
	3. Identify some of the key data in order to correctly attribute an OER
	4. Recognize a licence and know how to determine whether a resource has one

D2.1 | Use a search tool to find OER

Ability 2.1, *Use a search tool to find OER*, is based on technical capabilities. The first, which is

seemingly semantic, guarantees the quality of OER found in communities of practice. The second tackles OER search tools, which range from generic Internet search engines to specific resource repositories. The third invites teachers to discover specialized OER repositories so as to identify OER sources that could satisfy their needs. Finally, the fourth describes the technical mechanisms that teachers should understand to adopt best OER practices.

D2.1.1 | Understand the meaning of the various terms “bank”, “deposit”, “directory” and “repository of resources”, and be able to recognize them as the source of an OER

The semantics of the related terms “bank”, “deposit”, “directory” and “repository” need to be clarified when referring to OER. Depending on the place of the words in the sentence, the first three terms are often interchangeable. They designate “a device for storing a collection of resources. For printed resources, this can be a library. For digital resources, it is one or several computer servers (computers) containing digital files essential to the function of each of the digital resources”¹.

Moreover, some of these reference computers (repositories) gather the metadata pertaining to OER collections. These OER can be hosted on the same computer, a computer in the same building or a computer in a different building and OER hosting system.

Beyond semantics, the main role of a resource bank is codifying the rules for belonging to and participating in a specialized community. This community can gather teachers, the creators of resources, archivists in charge of describing the resources, technical and executive officers, and, of course, OER users, among others. As the common interest at the heart of the community’s cooperation resides in OER, this common denominator guarantees, to a certain extent, the quality, the uniformity and the accessibility of the resources stored in that repository. That is why tried and tested resource banks serve as a benchmark for practitioners, who tend to prefer them to generic search engines such as Google, YouTube or even Wikimedia. This educational specificity is thus what distinguishes an OER deposit or repository.

¹• This is the translation of the French definition given by the Canadian website “Banques de ressources éducatives en réseau” (BRER, or Educational resource bank network): http://brer.liceef.ca/index.php?option=com_content&view=article&id=16&Itemid=114

D2.1.2 | Search for OER on the Internet with simple and advanced search mechanisms by manipulating the search parameters in order to modulate the search results of OER as required

There are two main search mechanisms for finding OER. At the beginning of the OER movement, i.e. around 1999 and before the 2012 OER Paris Declaration², when such resources were known as learning objects (LO), the architects of resource repositories used libraries as a source of inspiration to “label” the resources with descriptions. This work is better known as resource indexing (e.g. title, author, year of publication, etc.) These labels are called “metadata”, which literally means “data about data”. In this particular case, the data are educational resources. By their structured language, metadata allow computer systems to communicate with each other.

It is thus possible to search through resource banks such as Unisciel (www.unisciel.fr), Ceres (<http://ceres.vteducation.org>), Éduscol (<http://eduscol.education.fr>) and Carrefour éducation (<http://carrefour-education.qc.ca/recherche/ressources>) because of the standardized description of resources, which enables users to interrogate the database efficiently. The collections of resources within these deposits generally imply that indexing specialists – archivists – have written or checked that the metadata are correctly entered.

Nowadays, online search engines are powerful enough to conduct very conclusive searches, as long as the user is familiar with the search functions. Google uses powerful algorithms that analyse the number of clicks, the information in the header of the page (where the metadata are, if the website has any), the words in the page and the co-occurrence of words and searches to provide the user with convincing results. These popular mechanisms have become so efficient that some say that structured OER repositories are no longer necessary. That is not at all accurate, but it is understandable.

All search engines, whether they are on a website or part of an OER platform, work from databases. The search parameters enable users to generate convincing results. Generally, the default setting of search engines is “simple search”, with an input field into which the user types the terms describing the subject of the search.

2• <https://goo.gl/koslLQ>

Some simple tips help to generate better results. For instance, a user searching for a precise name, such as Johann Bach, should place it between inverted commas - "Johann Bach" - or only the most popular pages will appear: in this case, those pertaining to Johann Sebastian Bach, followed by a multitude of pages featuring Johanns and Bachs, the other search terms. Some operators such as "+", "&" and "not" help to narrow search results. Users need only consult each site's "Search help" to know which operators to use.

However, the main search engines offer advanced-search functions, which allow the user to avoid operators altogether. These functions are presented as fields with drop-down menus, in which the parameters can be selected according to the chosen criteria. Google Books' (<https://books.google.com>) advanced search is a good example.

Moreover, Ramade (2015, p. 30) states that "a resource published online under a Creative Commons licence is indexed as such by search engines such as Google, which means it can be found more easily, via the advanced search with rights criterion." To use Google's advanced search on Google Chrome, the user must click on the Options icon (the cog), choose Advanced Search and select the relevant fields, particularly "Languages" and "Rights".

As an example, go onto Google's advanced search interface and type in "seasons cycle". Under "Find pages with... all these words", select English and click "Advanced search". You will come up with images, films and several types of resources that are not necessarily copyright-free.

Repeat the process, using the parameter "Then narrow your results by... usage rights", and select "free to use, share or modify, even commercially". This time, you will only obtain copyright-free resources that correspond to Creative Commons' CC BY licence. Inversely, launching a simple Google search with the equivalent "seasons cycle CC BY" does not exclusively result in OER.

Caution: a correctly conducted advanced search does not guarantee that the resource is free. Each resource then needs to be individually checked on its original site to verify the licence.

Google's help centre (<https://support.google.com/websearch/answer/29508?hl=>) makes it easy to search for copyright-free images. Consult Flickr Creative Commons (www.flickr.

com/creativecommons) and Wikimedia Commons (<https://commons.wikimedia.org>) for photos and videos, Jamendo (www.jamendo.com/start) for music and Wikipedia (https://en.wikipedia.org/wiki/Main_Page) for general media. The Wikimedia Commons search centre includes several of these searches.

D2.1.3 | Know the major OER repositories and be able to specify those that are the most suited to your needs

The list below features some of the most structured and best-known OER repositories in the French language.

- **L’Initiative pour le développement numérique de l’espace universitaire francophone** (IDNeuf, or the “Francophonie University Initiative for Digital Development”; www.idneuf.org) is a French meta-portal.
TUNISIA This meta-portal run by the Agency of Francophonie Universities (AUF) is intended for various public, but mainly for French-speaking teaching and instructional design staff. It references many French digital resources, publicized by their authors.
The format of the data and metadata of the resources is compatible with the Learning Object Metadata (LOM), LOMFR and SUPLOMFR standards.
- **Éducasources** (<http://educasources.education.fr>) is France’s online digital resource base. It gathers reliable, quality resources tailored to school curricula and selected by the experts and archivists of France’s Canopé network, a network for educational creation and support.
FRANCE Adapted to all education levels, from nursery until PhD. Mainly for teachers, teacher-archivists and trainee teachers. Resources are necessarily free and can be accessed without prior identification. They have been selected and described by Canopé network professionals, and are taken from a corpus of sites. The licence seems to be an open licence issued by the ministry.
Éducasources’ description model for online digital resources is compatible with the following metadata standards: Dublin Core, LOM, LOMFR and ScoLOMFR. This compatibility means that Éducasources data are interoperable with other national education bases in Europe and the world.

- **Éducol** (<http://eduscol.education.fr>) is France's education portal.
FRANCE France's national networks of industrial science and techniques resources aim to offer teachers educational resources suited to a given level. Generally, these resources are linked to recently renovated programmes or repositories. These resources are created by teams of professors and selected by the national General Inspectorate of Education, in collaboration with regional and national inspectors. They are designed to include curricular changes and should be easy for teachers to use. The national networks of industrial science and techniques resources also have a second aim; that of ensuring a technology watch and lifelong training. They must be in phase with technological evolutions and innovations. They thus participate in technology transfers from companies to the national education sector. They must also incite teachers to anticipate on technological evolutions and include them in their teaching. To conclude, national resource networks mainly aim to anticipate, stimulate and support the necessary evolutions of technological teaching during high school and in higher education, for technological and scientific education as well as professional training. They also enable teachers working in industrial fields to continuously update their skills.
The resources seem to be referenced by metadata profile.
- **OER@AVU** is the African Virtual University's OER portal (<http://oer.avu.org>).
AFRICAN VIRTUAL UNIVERSITY This portal gathers 12 African universities from ten African countries where English, French and Portuguese are spoken. It also benefits from the contribution of 146 authors and revisers. In total, 219 modules have been produced, 73 of which are in all three languages: 46 in mathematics and science, four in basic ICT skills, 19 in professional teacher training and four in the use of ICT in teaching.
PDF documents created by teachers, as well as simple YouTube videos. The OER are indexed in accordance with the Dublin Core standard and seem to be hosted directly on the portal, without belonging to a federation of repositories.
- **Canopé** (www.reseau-canope.fr) is France's educational creation and support network. Its original mission is to reinforce the educational community's action and guide pupils to success.
FRANCE The Canopé sites are changing, and welcome teachers and education partners to its new open, user-friendly spaces, the Ateliers Canopé (or Canopé Workshops). The Ateliers Canopé are simultaneously bookshops, media and training, experiment and

entertainment centres. They are nearby places offering numerous features and services. In each region and *département*, the Canopé sites showcase the resources, know-how and practices of a nearby, territorial network.

A subcategory referenced in Éducasources.

- **Ceres** (<http://ceres.vteducation.org>) offers a collective catalogue of teaching and learning resources collected by various institutions that produce and gather digital resources. This search tool is managed by Quebec's Vitrine technologie-éducation (or "technology-education showcase"), a non-profit organization that promotes the use of technology in educational institutions. Our partners are responsible for the accuracy of the descriptive index cards.

QUEBEC (CANADA) This software application is a version of the Comète tool, developed with Open Source as part of the *Banque de ressources éducatives en réseau* (BRER or "Bank of educational resources network") project. The initiative was instigated by the LICEF Téluniversité (Téluq) research centre and the Vitrine technologie-éducation, with the collaboration of the ORI-OAI referencing and indexing project (France) and the GTN-Quebec, or Quebec working group on norms and standards in the fields of learning, education and training.

Ceres is part of the semantic web movement, uses the new ISO-MLR (Metadata for Learning Resources) standard and has adopted the Resource Description Framework (RDF) approach. Comète is distributed under a GPL v.3 licence.

- **Examen.sn** the Senegalese portal that offers pupils help with exam revision (<http://examen.sn>)

SENEGAL A site offering help for exam revision: the end-of-primary certificate, the final junior-high exam and the baccalaureate. It offers lesson summaries, corrected exercises, animations, corrected exam papers, careers advice and forums.

The OER seem to be hosted on the portal, without belonging to a federation of repositories.

- **École supérieure de l'éducation nationale, de l'enseignement supérieur et de la recherche** ESENER, or Higher school of national education, post-secondary education and research) (www.esen.education.fr)

FRANCE The documentary policy implemented by the resource centre is part of the ES-

ENESR's resource-training and development policy. This policy allows trainees to acquire and develop a supportive culture. The documentary collection, which is constantly updated, aims to meet the informational needs of the administrative, technical, social and healthcare managers and staff working in post-secondary education, research and France's ministry for education. It also aims to satisfy institutional priorities. The collection comprises:

- 27,514 works;
- 150 journals;
- a selection of digital resources;
- official reports and documents pertaining to primary, secondary and higher education.

A subcategory referenced in Éducasources.

- **AbulÉdu Data** (<http://data.abuledu.org>)

FRANCE AbulÉdu Data is a digital library of French-language educational resources, selected from existing banks, but also specially created or translated. With more than 20,000 free reference works adapted to teachers' day-to-day life, AbulÉdu Data invites everyone to become contributors (CC BY-SA licence). Each file deposited is validated by the AbulÉdu community, and the user community is encouraged to take out an annual subscription.

In accordance with the ScoLOMFR standard, the AbulÉdu Data indexing system has its own file format, which enables standard entries such as the title of the document, its description and its keywords, but also teaching entries such as the skills and level of the target public, the teaching area, related activities, etc. The creation of mirror servers allowing it to be duplicated on other websites is not only enabled, but strongly encouraged.

- **Carrefour éducation GRICS** (<http://carrefour-education.qc.ca>) has made it its mission to offer teachers working in preschool, primary and secondary education fast, efficient, free access to relevant, validated resources. Its aim is to facilitate and enhance pupils' skill acquisition.

QUEBEC (CANADA) The websites featured in Carrefour éducation's search tool offer free, online resources that can be exploited by teachers working in preschool, primary and secondary education. Their content is similar to that of the training curriculum in

Quebec schools.

A team of about 20 motivated, competent teachers is tasked with validating the websites suggested for Carrefour education's repository. These collaborators all have a distinct interest in ICTs, a good knowledge of the reform, sharp critical thinking skills and excellent writing skills.

Almost 4,000 websites are listed. They are all summarized, indexed and sorted by education level, learning area and general training area. Some are described in more detail than others, and come with suggestions for use in class. The repository is subject to weekly additions, updates and deletions. All the suggested links are checked several times a year.

- **Learning resource engine** (www.fun-mooc.fr), France université numérique (FUN, or France's Digital University).

FRANCE Features resources offered by French universities and research institutions, and disseminated by France's *Universités Numériques Thématiques* (UNT, or thematic digital universities). There are more than 31,000 free, digital learning resources (lessons, conferences, exercises, multiple-choice questionnaires, etc.) in different formats: videos, web-documentaries, software, websites, and for every audience: students, teachers, researchers, professionals or amateurs passionate about a certain theme. Suited to every level, from undergraduate to professional training.

The search engine is based on the ORI-OAI referencing and indexing project (www.ori-oai.org) and was developed in collaboration with the Université de Valenciennes. Indexing is available in the learning-resource Open Data dataset format.

- **Sankoré** (<http://sankore.org>)

FRANCE An ecosystem for the creation, publication, dissemination and sharing of digital open educational resources (DOER), open to all teachers.

The Open Sankoré software is an open, cost-free software for teaching, creating and sharing digitally.

There is a Sankoré digital class equipment programme (CNS), which provides teachers with digital training and helps them to produce digital open educational resources.

This is a resource bank in the full meaning of the term, with the descriptions of resources and a platform to select them, find them and view/download them. It does not seem to belong to a federation of banks. The resources seem to be hosted on

the server, with their descriptions.

- **Unisciel** (www.unisciel.fr): this French online science university gives access to a range of learning websites including Fuse School, the French-English video series on scientific notions; the French Socles, science self-study modules for undergraduates; FAQ2Sciences, the French self-study science portal for high school students and Kézako, the French video series that answers everyday science questions.

FRANCE Unisciel is a scientific interest group belonging to France's seven thematic digital universities. With its 40 universities, higher education institutions and research centres, Unisciel offers free access to more than 4,000 resources in the form of modules or chapters, as well as other similar initiatives such as the self-study Socles modules and the Fuse School video series.

The OER produced are indexed by the universities or professional archivists, in accordance with the SUPLOMFR standard. The resources, centralized in portals, do not seem to be stored for downloading purposes, but rather organized by surfing technique.

- **Teacher Education in Sub-Saharan Africa (TESSA)** (www.tessafrica.net)

SUB-SAHARAN AFRICA/UNITED KINGDOM TESSA is a network of teachers and teacher trainers working in collaboration with the Open University (United Kingdom). Its aim is to improve the quality of teaching and the access to quality OER for teachers in Sub-Saharan Africa. TESSA's resources are offered in four languages: English, French, Arabic and Swahili. All OER are created and adapted by national experts. They can be accessed in Word or PDF. This is mainly an English-language initiative, the resources of which are also created and made available in French.

The OER are offered under the Creative Commons (CC) BY-NC-SA licence, and do not seem to be referenced in accordance with a precise standard, although that must be the case. It is not a federated resource bank.

- **IFADEM teacher-training content** (www.ifadem.org)

AFRICA, HAITI AND LEBANON IFADEM is a teacher-training programme designed in close collaboration with the ministry for education in each of the countries concerned. This programme is for primary teachers in developing countries, with a special focus on rural

and suburban zones. It has been implemented in 11 countries: Benin, Burundi, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, Haiti, Lebanon, Madagascar, Mali, Nigeria, Democratic Republic of the Congo, Senegal, Chad and Togo.

The resources are mainly presented as PDF booklets and are designed by content and pedagogical experts. Their aim is to reinforce and enhance teachers' skills.

The OER are offered under the CC BY-NC-SA licence, and do not seem to be described formally, but their organization by type, theme and keywords suggests that minimal descriptive cards are used, similarly to the Dublin Core system. It is not a network bank, but rather a resource website.

- **Francophonie Khan Academy** (<http://communaute.khan-academy.fr>)

Khan Academy offers a revolutionary platform, which is fun and interactive, to learn, practise and test oneself. It also provides professors and parents with the opportunity to monitor children's progress, support them and help them to improve. This portal is an offshoot of the famous U.S. Khan Academy, founded by Salman Khan. It offers hundreds of mathematics, science and computer science videos organized as educational courses.

This is not really an OER bank, as all the videos, although open, accessible and free, are still protected by U.S. copyright.

The suggested banks have various forms and target different publics. Teachers should thus explore each resource bank to discover which best suits their needs (teaching level, sphere of knowledge, granularity of the resources, etc.). Not all of these portals are, per se, OER banks. Several have evolved as resource websites produced by the community, unlike banks, deposits and repositories, which tend to be run by educational and information-management research institutions.

“Granularity” refers to the size, complexity and organization of the resource, and to the number of media used. Each data object (text, sound, video, exercise, etc.) is considered one block in the resource's structure. A resource is considered to have fine granularity if it is only made of one data object, such as a picture. Inversely, a course module is considered of coarse granularity, because it gathers several data objects, which also contain sub-categories. The whole module is then arranged in one coherent unit to satisfy teaching needs (lesson or programme).

Furthermore, each OER bank has a distinct profile depending on the type of its resources. Thus, Wikimedia Commons (<https://commons.wikimedia.org/wiki/Commons:Welcome>) is a “media file repository making available public domain and freely-licensed educational media content (images, sound and video clips) to everyone, in their own language”. Khan Academy, on the other hand, mainly offers videos on maths, science and computer science.

Explore OER banks to discover those that suit you. Even if each home page is different, you will generally manage to find the “Browse” feature, which allows you to explore without a precise goal. This kind of navigation is useful for gaining a better idea of the resources in the deposit.

Next, specify your search using the available discovery filters. These vary significantly, but they generally start with keywords, followed by options such as theme, education level, rights, author, institution and potentially all the elements in the metadata profile. The advanced search tools help narrow search results. The user guide developed by the Banque de ressources éducatives en réseau (BRER, or Educational resource bank network³) offers several useful pieces of advice to find resources. It is thus recommended to use a thesaurus to determine which keywords used in the resource bank correspond to the subject of your search. This knowledge is very useful for performing more efficient simple searches.

D2.1.4 | Understand the role played by the standardization of metadata in the interoperability of banks

Because of their predetermined information exchange structures, metadata standards such as the LOM (Learning Objects Metadata) and, more recently, MLR (Metadata for Learning Resources⁴) standards allow systems to communicate in a manner that resembles intelligence. A metadata standard describes an understanding between different parts regarding the name of a concept (e.g. “date” or “rights”) and the information describing the concept (e.g. in terms of its encoding – characters, numbers or standard – the number of characters allowed and the way different languages are managed, etc.).

3• Consulted online on 4 November 2015 at: <http://brer.liceф.ca>, Section 1: “Rechercher et consulter les ressources” (Find and consult resources).

4• The BRER website has a section on norms, standards and application profiles that gives more information on OER metadata (www.refrer.liceф.ca/les-banques-de-ressources/normes-standards-et-profils-d-application).

When a standard has proven its worth, it becomes a norm and stops evolving. Communities of practice often equip themselves with conventions for the extension and specific applications of a standard or norm. These are called “application profiles”. Thus, in Quebec, Normétic (www.gtn-quebec.org/standard/normetic-2.0) is an application profile for the LOM standard, as ScoLOMFR (www.reseau-canope.fr/scolomfr/accueil.html) is in France.

Such conventions allow separate systems to “speak to each other” (display “Title” and search for “Author”) and exchange information (“Send me the descriptive index cards for all the new OER that have appeared in the system since this morning, 00:00 GMT; all the titles by the author XXX”). OER deposits that interrogate one another are known as “federated banks” or “resource federations”. These networks are capable of linking a deposit in Senegal to other deposits that can be very far away: in Lyon, France, or Montreal, Canada, for instance.

If two systems use different metadata standards, which is often the case, “gateways” are set up to link the metadata fields in one system to their differently identified equivalents in the other system. To give a very simple example, the equivalent Title between the LOM standard and the universal metadata standard, Dublin Core, is established as follows: DC.Identifier (Dublin Core) = General.Identifier.Entry (IEEE Learning Object Metadata).

These gateways make systems “interoperable”, which means that they “speak” to each other in “machine language”, without human involvement.

D2.2 | Select appropriate OER

Teachers who wish to select OER must know how to recognize the quality of those they find, to determine whether using them is worthwhile. They must also be able to determine whether resources are OER. That is why this ability comprises four capabilities: recognizing quality criteria, knowing the validation mechanisms for OER, knowing the key data on OER to reference them correctly and determining whether a resource is an OER.

D2.2.1 | Know the quality criteria of an OER

The Télug’s (network of Quebec universities) De la Teja, Lapointe and Lundgren-Cayrol

(2007)⁵ established a detailed OER quality-assurance framework for the managers of OER banks. This framework stems from the Quality for Reuse (Q4R) project, an international collaboration within the Global Learning Objects Brokered Exchange (GLOBE) Consortium. Its results are generally available in English⁶. Its purview is far broader than that of the competences targeted in this framework, but it is still one of the most relevant references on the topic.

The authors describe the quality-control procedures for resources, which apply to the three main phases of their lifecycle: design, publication and reuse (Figure 3).

Quality-assurance strategies are established for each of the phases of the resource's lifecycle (Figure 4).

During the design phase, the quality of an OER can be assessed through three dimensions – education, accessibility and ergonomics – and its degree of interoperability. For each of these dimensions, the authors suggest a series of quality requirements that authors and managers should monitor. They also reviewed the literature on the quality criteria of an OER, giving the views of several authors. According to Parmentier (1999)⁷, for instance, an OER must be sustainable, adaptable, reliable, manageable, accessible, interoperable, retrievable and reusable. It should also be easy to assess and index it.

Three other lists of criteria written by various authors are also presented.

The quality strategies suggested for the resource's publication phase pertain to its metareferencing: "The quality control following the second phase of a learning object's (LO) lifecycle depends on its having a reliable, interoperable metadata card, giving users a better opportunity to find the LO they want"

5• "Portrait général des stratégies d'assurance qualité des ressources d'enseignement et d'apprentissage (REA) : à l'attention des gestionnaires" ("General overview of the quality-assurance strategies for learning objects (LO) – Managers' Guide"), available online at: www.gtn-quebec.org/rapport/portrait-general-des-strategies-dassurance-qualite-des-ressources-denseignement-et

6• Quality for reuse: www.q4r.org/Home/tabid/74/language/en-US/language/fr-FR/Default.aspx

7• See De la Teja et al., 2007, p. 13.



Figure 3. Quality-control procedures for a resource according to the three phases of its lifecycle – De la Teja et al. (2007).

D2 Searching for OER

OER MANAGEMENT PHASE	QUALITY ASSURANCE STRATEGIES AND DIMENSIONS		
	Educational	Media	Reuse
<p>PHASE 1: DESIGN</p> <p>This phase includes the analysis of learning needs, educational and media design, development, implantation and summative and formative assessment.</p>	Instructional design principles of online learning. Peer review.	Accessibility principles.	Conformity with standards (e.g. SCORM, IMSLD or the specialized LMS)
	Communication principles between content and pedagogical experts.	Media principles (navigation, ergonomics, etc.).	Use of editors making it easier to conform with norms and standards.
	Interoperability rules. Accessibility rules. Communication principles between content and pedagogical experts.		
<p>PHASE 2: PUBLICATION</p> <p>This phase includes the referencing and the deposit (or not) of the resource.</p>	Use of metadata describing the teaching approach according to the type of OER.	Use of metadata describing the media profile according to the type of OER.	Use of technical data. Automatic metadata capture. Verification by technical and indexing experts.
<p>PHASE 3: RÉUSE</p> <p>This phase includes the finding, use, annotation and revision of OER.</p>	<p>Communication strategies and means to:</p> <ul style="list-style-type: none"> • graphically summarize annotations; • present reuse statistics; • make it possible to assess contributors by their other contributions. <p>Numerous ways to allow finding.</p>		
	Automatic tracking of positive and negative annotations	<p>Tracking of broken links.</p> <p>Tracking of OER opening failures.</p> <p>Use of the link field to link an OER with a corresponding OER of coarser granularity (lesson, programme, etc.).</p>	

Figure 4. OER quality-assurance strategies and dimensions for each phase of the life cycle – De la Teja et al. (2007) p. 17.

Guidelines and specific strategies are also given for OER creators who do not belong to the organization that manages the bank, and who are authorized to deposit OER.

As for the third phase of an OER's lifecycle, reuse, quality strategies depend on the bank's functions, and not on the OER itself. At a very high level, "the reuse capacities of an OER will be improved by: (1) allowing various search methods and an ergonomic presentation of results; (2) enabling users to make annotations and recommendations, and judge the quality of an OER, etc.; (3) clearly identifying the quality-control strategies established in the bank in phases I and II; and (4) establishing maintenance methods to ensure the quality of the metadata".

Ultimately, for teachers' needs, the different competences presented in this guide already guarantee a minimal degree of OER quality. The situation is much more complicated for the managers of OER banks. However, a very convincing, simplified process can be envisaged. For instance, as long as teachers' OER are judged of sufficient quality for an OER bank, they can simply answer a list of straightforward questions that will give information on the OER. This information becomes the specific metadata that are otherwise automatically generated by the bank's system (e.g. the date, the technical format of the resource, the cost, the licence, etc.).

D2.2.2 | Know the validation mechanisms of the quality of OER

Ramade (2015, p. 31) emphasizes that the disintermediation brought about by the Internet can lead to a loss of quality. Thus, the editor, for example, who would once have hired an author, a proofreader and other specialists before publishing a book, is no longer part of the digital production chain. Nevertheless, two different approaches currently guarantee the quality of an online OER.

The first approach, peer review, is inspired by the traditional model of scientific publications, a more centralized approach in which specialists validate the quality of a resource. This is the model that the U.S. resource repository Merlot (www.merlot.org/merlot) follows. An expert panel revises any new resource submitted to the bank. This approach is more laborious and does not allow for many OER to be processed over short periods of time, but the subsequent validation is generally extremely reliable.

The second is the collaborative approach, used by the Wikipedia encyclopedia. In this approach, the community validates the resource by reading and proofreading it, thus guaranteeing the sustained quality of a content. Two major features in the success of this mass model is that open platforms make it possible to restore a previous version thanks to the modification history, and that many authors supervise the validity of the content. They are thus able to denounce and block malicious behaviour.

From a technical perspective, the use of open formats that allow the resource to be accessed and reused contribute to its quality (Ramade, 2015, p. 31). The participative mechanisms of the Internet 2.0 such as votes, reviews (e.g. number of stars), the number of clicks, an author's reputation and the resource recommendations made by informal communities on social networks also guarantee OER quality.

According to their individual practice, each teacher will quickly learn to identify the most suitable sources of OER. If OER have sources renowned for their quality such as Éducasources or Carrefour éducation, teachers can be reasonably sure of their educational quality and validity, as they are selected and often developed by teachers.

Ultimately, there is undoubtedly no better sign of quality than, after assessing a resource and deeming it useful to convey a particular concept, submitting it to learners and judging its relevance and quality from their reaction.

- For a specific lesson, a quality OER should be adapted to the level of its public.
- It should engage learners in the learning process.
- It should be flexible enough to embrace different teaching strategies and allow learners to use it frequently, in different ways from person to person and from time to time.
- It should also be fun. Learning becomes a game when learners can experiment without fear of being judged for their answers, and when the activity motivates them to try again so as to acquire extra information, or find an alternative discovery route.

Such a strategy for using OER cannot fail to lead teachers to wish to improve existing OER and create their own. It should also lead to a collaboration of practice and exchange between practitioners, which will, in turn, fuel the OER movement. Finally, teachers should

encourage their students to seek and use OER for the purposes of self-directed study, and, at more advanced levels, develop their own curricula/courses of study⁸.

D2.2.3 | Identify some of the key data in order to correctly attribute an OER

The *Guidelines for Open Educational Resources (OER) in Higher Education* (2011, 2015) rightly suggest “reinforcing the need to credit the original author/source of the content that is being accessed through open licensing”. Users should bear in mind that the essential and minimal condition for reusing an OER is attributing its authorship to its original author.

To do so, it is important to systematically note the provenance of OER and correctly identify their authors. Otherwise, the resource can in no way be reused. Here is the minimal information to gather:

- The name of the author
- The link to the author’s website or profile in the repository
- The title of the work
- The link to the work in the repository
- The type of licence
- The link to the licence deed.

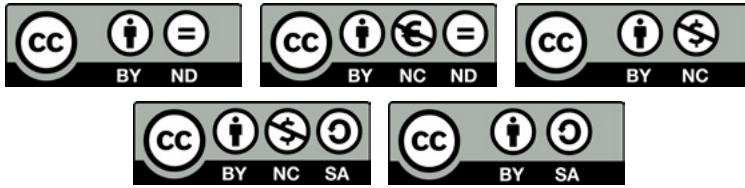
D2.2.4 | Recognize a licence and know how to determine whether a resource has one

Before even knowing the different types of licences, and particularly the Creative Commons (CC) licences, OER users should be able to check if resources have licences allowing their use. In the simplest scenario, the resource clearly has a licence, like the free Creative Commons CC BY licence, which can be identified by its logo.



All CC licences have a similar style: the CC appears first, followed by the terms of the licence. The initials ‘BY’ always appear. The other five possible licences, which are mentioned later, are:

⁸ Guidelines for Open Educational Resources (OER) in Higher Education (2011, 2015), UNESCO and Commonwealth of Learning, point 2.3.g, p. 10 of the PDF version: <http://unesdoc.unesco.org/images/0021/002136/213605E.pdf>



Source: creativecommons.org

As mentioned before, the CC licensing system has been incredibly successful because it is so simple and user-friendly. Nowadays, several countries still have their own CC organization. This was important until very recently, because licences had to reflect each country's legal code. However, since November 2013, Version 4.0 of the Creative Commons licences has been standardized in accordance with international laws and is therefore adapted to usage, whatever the resource's country of origin.

Other licensing systems are just as widely used. They can apply to a different kind of resource (software, image, music, etc.) or be specifically written by the lawyers of an organization to specify its exact conditions. These licences are generally specified at the bottom of the page, either by an image or text. Sometimes, the whole site has to be checked to find out whether a particular kind of licence applies to the site in its entirety, even if it is not stipulated at every level. In any case, before using material, everyone must check whether it has a licence specifying its conditions of use, and, in the absence of a licence, infer that the material is proprietary and that permission must be requested before using it in a way that is neither educational nor minimal.

D3

Using OER

ABILITIES	CAPABILITIES
D3.1 Distinguish between the different types of Creative Commons licences	1. Set out in simple terms the comparative advantages offered by Creative Commons licences
	2. Understand the exceptions to the laws of intellectual property and name at least two that apply in teaching
	3. Identify the four basic options for Creative Commons licences, know their initials and explain their meaning
	4. Identify at least one of the reasons given by those who oppose the licensing system
D3.2 Respect the terms of Creative Commons licences	1. Use a resource licensed under the Creative Commons licensing system
	2. Demonstrate understanding as applied to the Creative Commons licensing system

D3.1 | Distinguish between the different types of Creative Commons licences

Ability 3.1, *Distinguish between the different types of Creative Commons licences*, aims to acquaint teachers with the CC licensing system. The first capability sets out some of the advantages of the CC system, beyond the concepts of “licence” and “community vitality”.

These advantages mostly explain why the system has been so widely adopted. They are also why we recommend it in the OER competency framework. The second capability explains the exceptions to intellectual property available to the creator of a new resource. The third

describes the four basic options of the CC licensing system and, finally, the fourth invites teachers to consider their needs and the implications of the CC licensing system before adopting it.

D3.1.1 | Set out in simple terms the comparative advantages offered by Creative Commons licences

CC licences are particularly user-friendly because of their presentation, which has three distinct but complementary forms: (1) the simplified version (<https://creativecommons.org/licenses/by/4.0/deed>), intended to be read and understood by everyone, (2) the legal version (<http://creativecommons.org/licenses/by/4.0/legalcode>), meant for lawyers, and (3), the digital version, which allows the licence to be read and interpreted by information systems¹. These characteristics and CC's international influence explain why this guide opted for the Creative Commons licences, which are perfectly suited to educational needs². Moreover, it should be remembered that, as for all licensing systems, CC has the major advantage of stating the permissions granted to the users of the resource *before* they use it.

1• This multifaceted presentation is well illustrated by the three-layer graph on the Creative Commons website (<https://creativecommons.org/licenses/>). Here is an example of the code developed by the licensor in a digital licence:

```
<a rel="license" href="http://creativecommons.org/licenses/by-nc-sa/4.0/">
</a><br/>
<span xmlns:dct="http://purl.org/dc/terms/" property="dct:title">Mon oeuvre
</span> de <a xmlns:cc="http://creativecommons.org/ns#" href="http://mooc-rel.
blogspot.ca/2015/07/le-message-de-paris-un-appel- lation.html" property="cc:at-
tributionName" rel="cc:attributionURL"> Démonstration de licence numérique</a>
est mis à disposition selon les termes de la <a rel="license" href="http://creativecom-
mons.org/licenses/ by-nc-sa/4.0/"> licence Creative Commons Attribution - Pas d'Utili-
sation Commerciale - Partage dans les Mêmes Conditions 4.0 International</a>.
<br/>Fondé(e) sur une œuvre à <a xmlns:dct="http://purl.org/dc/terms/" href="http://
www.wikipedia.fr" rel="dct:source">http://www.wikipedia.fr</a>
```

In a website's header, this kind of information allows search engines to identify OER.

2• Other types of licences include the GNU General Public Licence (GPL), which has already been mentioned, the Free Art licence (<http://artlibre.org/licence/lal/en/>) and the CeCILL licence (www.cecill.info/index.en.html) for open software. These are specialized licences used in specific fields, whereas Creative Commons licences are an appropriate choice for all works except software, logos and trademarks.

D3.1.2 | Understand the exceptions to the laws of intellectual property and name at least two that apply in teaching

CC licences are legal tools that allow the authors of resources to retain copyright while making it easier for other people to use the resources as they would like. They precisely identify the permissions of use. Rather than universally ban any use not allowed by the creator, as is the case with copyright, CC expressly stipulates the uses that can be made of the resource.

CC licences do not affect the freedoms that the law grants the users of copyright-protected works, e.g. the exceptions and limitations to exclusive right. In this regard, it should be noted that the U.S. concept of “fair use” grants the public the right to reasonably use a work (e.g. copy and redistribute it), without this being considered an infringement of copyright: “the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright”³.

D3.1.3 | Identify the four basic options for Creative Commons licences, know their initials and explain their meaning

Creative Commons has four basic options that allow authors to indicate which uses can be made of their works (Table 1).

Combined, these four options offer eight possibilities, but logically, there are only six possible licences. These dual combinations are:

- Commercial/non-commercial (NC);
- Derivative works allowed/ no derivative works allowed (ND);
- Derived works to share under the same licence (SA)/licence can be chosen by the final creator.

3• Wikipedia: https://en.wikipedia.org/wiki/Fair_use. The aims of the resource’s creation must be weighed against the criteria that determine whether a work’s specific use can be termed a fair use: (1) the goal and the nature of the use, particularly for non-profit commercial or educational use; (2) the nature of the copyright-protected work; (3) the quantity and the scope of the part used compared to the protected work in its entirety and (4) the consequences of this use on the work’s potential market and value.











Authorship (Initials: BY)		Signature of the initial author. All CC licences require those who use your works to credit you in the way you request, but not in a way that suggests you approve of their use or give them your support.
NonCommercial (Initials: NC)	 	Non-commercial: It is forbidden to profit commercially from the work without asking the author's permission. This does not prevent the rights holder or an authorized third party from using the work commercially.
No Derivative Works (Initials: ND)		No Derivative Works: Only the original work can be copied or built upon. Whoever wishes to revise the original work or produce derivative works must ask the author's permission. ND licences thus allow neither adaptation, nor remixing.
Share Alike (Initials: SA)		Share Alike: The work can only be shared under the same conditions as the original. The author allows the work to be copied, disseminated and revised, provided that the new work is published with the same Creative Commons options as the original.

Table 1. The four basic options allowing authors to indicate which uses can be made of their work

$2 \times 2 \times 2$ options = 8 possible combinations. However, as the conditions ND (no derivative works) and SA (derivative works to share under the same licence) are mutually exclusive, this is not a valid combination. Moreover, sharing alike (SA) necessarily implies knowing the origin of the work (CC BY); there can thus be no CC SA licence. This means that only the six following licences are possible:

Table 2. The six Creative Commons licences.
Table taken in its entirety from [creativecommons.org](https://creativecommons.org/licenses)
(<https://creativecommons.org/licenses>).

	This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials
Attribution CC BY	

 <p>Attribution-Share Alike CC BY-SA</p>	<p>This license lets others remix, tweak, and build upon your work, even for commercial purposes, as long as they credit you and license their new creations under the identical terms. This license is often compared to “copyleft” free and open source software licenses. All new works based on yours will carry the same license, so any derivatives will also allow commercial use. This is the license used by Wikipedia, and is recommended for materials that would benefit from incorporating content from Wikipedia and similarly licensed projects.</p>
 <p>Attribution-No derivative works CC BY-ND</p>	<p>This license allows for redistribution, commercial and non-commercial, as long as it [the work] is passed along unchanged and in whole, with credit to you.</p>
 <p>Attribution-NonCommercial CC BY-NC</p>	<p>This license lets others remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms.</p>
 <p>Attribution-NonCommercial-Share Alike CC BY-NC-SA</p>	<p>This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms.</p>
 <p>Attribution-NonCommercial-No derivative works CC BY-NC-ND</p>	<p>This license is the most restrictive of our six main licenses, only allowing others to download your works and share them with others as long as they credit you, but they can't change them in any way or use them commercially.</p>

Only two of these licences are considered free: the CC BY and CC BY-SA licences. The four others are considered “open”, as there are still some restrictions. We will see further on that the ND clause is probably the most restrictive of all.

Ultimately, CC licences are thus non-exclusive permissions enabling rights holders to allow the public to make certain uses of their works while restricting others such as commercial exploitation and derivative works, and stipulate their conditions for redistribution⁴.

D3.1.4 | Identify at least one of the reasons given by those who oppose the licensing system

Finally, Creative Commons is not a universal solution for all needs and users. Publishers, for instance, warn users before they waive some of their copyrights by means of CC licences.

There is a longer list of objections and related explanations on the website of the Society of Composers, Authors and Music Publishers of Canada (SOCAN; available at: www.socan.ca/creators/FAQs/faq-creativecommons). Creative Commons warns about its limitations through its considerations for applying licences (https://wiki.creativecommons.org/wiki/Considerations_for_licensors_and_licensees#Considerations_for_licensors). This guide's Editorial Board thinks that, as far as teaching is concerned, it is always best to explicitly mention the terms for reusing a work, particularly as education is still widely considered a universal and fundamental right. Accordingly, educational content should be made as free as possible.

For more information on Creative Commons licences, here are some of the many resources you can consult:

- Creative Commons (<http://creativecommons.org>). Several pages of this U.S. site detect the language of your browser and automatically come up in your language. Otherwise, you just need to scroll down to the bottom of the page to choose your language.
- Creative Commons Licenses on Wikipedia (https://en.wikipedia.org/wiki/Creative_Commons_license).
- Creative Commons France (<http://creativecommons.fr>). It should be noted that since CC version 4.0, several national CC jurisdictions such as the French-Canadian version – creativecommons.ca – have been abolished.
- Presentation of CC licences with CC-Kiwi (<https://framtube.org/media/presentation-des-licences-creative-commons-avec-cc>); a French-language Framasoft video (5:20 minutes).
- Library guide of Montreal's French-language École de Hautes Études Commerciales

⁴ Creative Commons France : <http://creativecommons.fr/licences>

(HEC, or business and management university; available online at: <http://libguides.hec.ca/c.php?g=292975&p=1950920>).

- Fily, Marie-Françoise, Connaitre et utiliser les licences Creative Commons en 6 points (or “Knowing about and Using Creative Commons Licences in 6 Points”; available online at: <http://coop-ist.cirad.fr/content/download/5804/42700/version/3/file/Coopist-licences-cc-vfinale.pdf>), Montpellier, CIRAD, 2015, 11 p. Only available in French.
- The French document Ressources pédagogiques numériques et droit d’auteur (Digital educational resources and copyright), taken from the section Question juridiques (or “Legal Questions”; available online at: <http://univ-numerique.fr/questions-juridiques>) of the thematic digital universities’ website.

D3.2 | Respect the terms of Creative Commons licences

Ability 3.2, *Respect the terms of Creative Commons licences*, does not yet delve into the detailed rationale of the Creative Commons licences. It targets rather the OER user. The first capability simply recalls the basic obligation for those using someone else’s work, while the second more practically determines whether the teacher/OER user has grasped the basics of the CC licensing system.

D3.2.1 | Use a resource licensed under the Creative Commons licensing system

When you use someone else’s OER, whether you found it in a known deposit or an Internet search, you must attribute authorship to the rights holder by giving their name. You must also ensure that copyright notices are intact on every copy of the work, and give a link to the relevant licence deed for each of them. It is also illegal to apply restricting technical protection measures to your works (Digital Rights Management).

D3.2.2 | Demonstrate understanding as linked to the Creative Commons licensing system

In the previous section, we tackled the four Creative Commons options and the six ensuing licences. You undoubtedly took note of this information, but have you assimilated it? It is important to have a good grasp of the meaning of the different licences and know how to distinguish them by their initials and implications when it comes to assigning a licence to your work, especially if it incorporates other OER with different licences and provenances.

You can now check whether you understand the Creative Commons licences well enough to use them.

True or false?

- The authorship clause is part of some CC licences (false: every CC licence bears an authorship clause, because it is fundamental, in the licensing system, that the author always be identified as the rights holder).
- Anyone can use an OER, no matter the licence (true: the licences come into play only when revising, copying, distributing or profiting commercially from an OER).
- All CC licences allow the public to copy, distribute and share works, at least for non-commercial purposes (true: all the licences offer the public the non-exclusive permission to copy, distribute and share the work gratuitously, even in “collective” works).
- The Share Alike (SA) option only applies to works that the author allows others to revise and then share (true: the conditions ND [no derivative works] and SA [derivative works to share under the same licence] are mutually exclusive).
- There is no need to ask permission for copying or redistributing protected works when they are distributed on a site with limited access such as an educational intranet (false: you must always ask permission to copy and distribute works that do not specifically allow such uses, except for the authorized exceptions pertaining to fair use, educational use and other similar statutory circumstances).

Finally, we offer you a game developed by David Wiley, the influent U.S. professor who played an important role in the advancement of the causes of open software and OER. Go to <http://indstudy1.org/univ/355460515034/Flash/Lesson2/PracticeVersion.html> and check your ability to combine OER bearing different licences in a new composite work.

D4

Creating OER

ABILITIES	CAPABILITIES
D4.1 Design OER	1. Produce original or reusable content that can be assembled into a work that may be licensed to become an OER
	2. Know the right practices to design resources that take into account the educational and cultural dimensions of the resource, its technical quality and ergonomics as well as basic concepts in order to ensure its discovery and accessibility
D4.2 Revise OER	1. Be able to identify and distinguish a modifiable OER in open format (in particular by ensuring the original design format is available)
	2. Know the different options for adaptation of an OER (translation, sound, illustration, accessibility, contextualization, etc.)
D4.3 Remix OER	1. Know how to create an OER comprising various OER taking into account the specificities of licences and their potential for dissemination
	2. Know how to create an OER comprising various OER and content that is not open within the constraints associated with this type of composite work and specifying the rights associated with the individual content

D4.4 Co-create OER	1. Distinguish between the different modes of co-creation in order to use them wisely for the creation of OER
	2. Identify the contributors involved in the creation of OER by establishing and clearly stating each of their levels of contribution and their intellectual property

D4.1 | Design OER

It can be difficult to find a methodological guide for creating OER that exclusively targets teachers. The BRER (Educational resource bank network) initiative¹ and its Contributor's Guide² are a good starting point, but they mainly concern resources stored in institutional deposits, and their directives are often indirect (check policies) or very specialized (use specific metadata editors). The excellent GTN-QC (Quebec Working Group on Norms and Standards in Learning, Education and Training) document on OER quality-assurance strategies is more for resource bank managers.

To our knowledge, too few directives have been produced for teachers, pupils and members of the public interested in creating OER. This section on ability 4.1, Design OER, comprises an overview of the different steps for designing OER. Here, the challenge resides in the diversity of media and contexts, so we cannot go into detail. It is up to each community to come up with their own specific directives. Capability 1 is a copyright reminder for those designing original content. Capability 2 addresses best design practices.

D4.1.1 | Produce original or reusable content that can be assembled into a work that may be licensed to become an OER

The practices for designing OER are addressed in the next capability (4.1.2). This first capability is mainly a directive for teachers who produce content that can be assembled into composite works and thus licensed. We will then examine cases in which teachers do not

1• http://brer.lice.ca/index.php?option=com_content&view=article&id=5&Itemid=110

2• http://brer.lice.ca/index.php?option=com_content&view=article&id=24&Itemid=124

have at their disposal OER that may be used directly or incorporated into new composite works.

Teachers must ensure that they design all of their content by themselves. This implies writing original texts and citing their sources if they are inspired by other works. Similarly, they must shoot their own videos, take their own photos, record their original music, etc. Teachers cannot incorporate media from the public domain into their work, unless they plan to transfer their works to the public domain with CC0 (<https://creativecommons.org/share-your-work/public-domain/>).

Teachers can evidently use works belonging to others, as well as commercial works, in accordance with the provisions of fair use and the educational provisions of their legal system, as long as they cite their sources.

D4.1.2 | Know the right practices to design resources that take into account the educational and cultural dimensions of the resource, its technical quality and ergonomics as well as basic concepts in order to ensure its discovery and accessibility

We have already discussed quality criteria and validation mechanisms for OER quality in ability 2.2. This capability more specifically focuses on best practices for those who design OER.

As well as the recommendations for creation and reuse concerning the content itself, there are three considerations when designing resources intended for reuse.

First, your resource will belong to a certain “dimension”, according to the language you use, the degree of specialization and the public you target. Regarding teaching, the educational and cultural dimensions will hold our attention. Creators must be aware that the more they restrict the resource’s area of specificity, the more they limit its potential for reuse. They must thus strive to adopt a teaching method that is as universal as possible, and not limit their resources exclusively to their particular culture, unless, of course, the resources are specifically intended to address shortcomings in that culture.

The second consideration when creating OER is that of technical quality, in which we also include ergonomics and user-friendliness. It is not given to anyone to write quality code, produce resources that work in every environment and create a resource that is intuitive, well-presented and easy to use. However, these are some of the quality criteria that will determine your resource's potential for reuse. You should thus follow some basic rules to design quality resources.

First and foremost, you should choose tried and tested tools and editors that have large user communities, generate resources that can be executed in all technical environments and use a code that anyone can access. Internet content that is written in HTML5 and is available in the page's source code is a good example of content that can be executed in several technical environments (Macintosh, Microsoft, Linux) and on different platforms (Chrome, Opera, Edge, Firefox). A JPG, PNG or GIF image can be reused by all graphics editors, the only concern being the quality of the initial information (a very compressed image contains only few data and thus becomes difficult to use). Finally, once you have a good editor and a community to support you, an additional asset is choosing trusted software templates and libraries³ to develop your content. In this way, you will not have to question yourself as to the ergonomic relevance of your resource, because you will be starting with tried and tested templates.

The third consideration when designing resources is the normative aspect. At first, norms can seem difficult to observe. However, there are actually only two standards that ensure, on one hand, the accessibility of the resource, and on the other, its potential for discovery. We will now address these two normative approaches in their vulgarized form. Authors who do not have training in educational technology should bear these considerations in mind so as to optimize OER design.

Accessibility

Accessibility first targets persons who have a disability, so they can conveniently use and consult digital content. It now extends to almost every citizen, and designates access to the digital world via the adaptation of systems such as websites. "Accessible learning is achieved

³ Wikipedia: In computer science, a library is a collection of non-volatile resources used by computer programs, often to develop software. ([https://en.wikipedia.org/wiki/Library_\(computing\)](https://en.wikipedia.org/wiki/Library_(computing))).

by matching the individual learning needs of each student with a learning experience that addresses those needs. This can be accomplished through the resource delivery system by reconfiguring the resource, where possible, augmenting the resource or replacing the resource or parts of it with another resource that addresses the same learning goals”⁴.

To support this, learning materials or educational resources should:

1. Include labelling to indicate what learning needs the resource addresses;
2. Allow the creation of variations and enhancements through open licences;
3. Support flexible styling (e.g. enlarging the font, enhancing the colour contrast and adjusting the layout for students with vision impairments or mobile devices);
4. Support keyboard control of functions and navigation (for students who cannot use or do not have access to a mouse or pointing device);
5. Provide audio or text descriptions of non-text information presented in videos, graphics or images (for students who have visual constraints or who have limited displays);
6. Provide text captions of information presented in audio format (for students who have hearing constraints or lack audio interfaces);
7. Clearly separate text that can be read in the interface from underlying code or scripting (to enable translation);
8. Use open formats wherever possible to make it easier for alternative access systems and devices to display and control the resource; and
9. Adhere to international standards of interoperability so that OER can be used on a wide variety of devices and applications.

OER potential for discovery

In its *Guidelines for Open Educational Resources (OER) in Higher Education*, UNESCO suggests that the “ability to produce relevant and meaningful metadata for OER”⁵ is part of the expertise required to create and share OER. This directive mainly addresses institutional and governmental players that issue policies and manage OER repositories, particularly regarding expertise in “knowledge of, and skills to deploy, standardized global taxonomies for

4• In the interest of reinforcing the practices for improving OER accessibility, the two following sections are entirely taken from *Guidelines for Open Educational Resources (OER) in Higher Education* (2011, 2015), UNESCO and Commonwealth of Learning, Appendix 2, p. 21-22 of the PDF version: <http://unesdoc.unesco.org/images/0021/002136/213605E.pdf>

5• Ibid., Appendix 1, point 8.b, p. 20

describing resources in different disciplines and domains⁶ and “website design and management skills to create online environments in which content can be easily discovered and downloaded”⁷.

Nevertheless, capturing key metadata can make a world of difference between an OER that remains obscure and one that becomes popular.

A video produced by The Orange Grove Repository offers a simple solution for anyone to adopt:

The third step [of the OER creation process] is adding the metadata. “When Michelle saves her book [in Microsoft Word], she notices the metadata text fields at the bottom of the ‘Save As’ window. Her name is already listed as “Author”. She could add more names if she had co-authors. She enters the title and subject, then several tags that describe the content of her work⁸. When Michelle clicks “Save”, the metadata is embedded in the document.” (Figure 5)⁹.

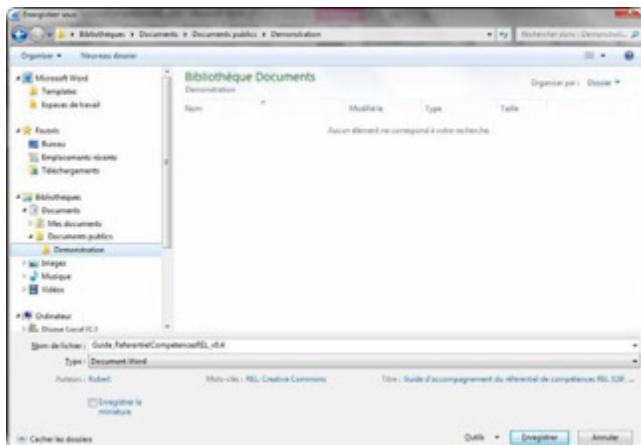


Figure 5. Metadata input option in Microsoft Word's "Save As" window.

6• Ibid., Appendix 1, point 8.c, p. 20.

7• Ibid., Appendix 1, point 8.d, p. 20

8• Please note that this varies from one editor to another.

9• Transcription of the video “Creating OER and Combining Licences”, produced by The Orange Grove Repository, in Florida (United States). Watch the video online on YouTube: www.youtube.com/watch?v=Hkz4q2yuQU8

This metadata input option in media editors or metadata editors is the ideal solution. In the absence of such a solution, OER creators should always strive to describe, cite and correctly attribute all the information relevant to the resource, and make it available to the public so that it is correctly transmitted in the creative chain.

This practice allows the OER to be discovered and makes it easier for archivists to index it¹⁰. Here follows the minimal information to give. Doing so should not significantly add to the author's workload¹¹.

- Title
- Author
- Short description
- Tags
- Date of creation
- Level
- Teaching goals
- Estimation of the duration in learning time
- Potential prerequisites

For more details on the points addressed in this section, and particularly the educational and cultural dimensions, quality, accessibility and metareferencing, the BRER Managers' Guide¹² makes several useful recommendations. Moreover, the points to take into consideration when implementing basic accessibility provisions are mostly simple and effective¹³.

10• Archivists index OER in accordance with the norm in force in their community of practice. The Learning Object Metadata (LOM) standard is the basis for OER description. Since this initial standard was developed, ISO has published the new international norm in force for OER: the Metadata for Learning Objects (MLR) norm. See Section 2.1.1. for a more detailed explanation of the role of metadata in the standardization of OER potential for discovery.

11• InterUNT – Production and teaching level groups, Guide auteur (Authors' Guide), 2012; PDF available at: <http://univ-numerique.fr/wp-content/uploads/2014/07/Guide-auteur-inter-UNT.pdf>

12• See particularly the sections regarding the design and publication of OER in the BRER Managers' Guide (only available in French):http://brer.liceef.ca/index.php?option=com_content&view=article&id=23&Itemid=121#Section2.1

13• For more information, you can consult the Consortium 3W accessibility norms: www.w3.org/TR/WCAG20/

D4.2 | Revise OER

Ability 4.2, *Revise OER*, comprises two capabilities: first, recognize modifiable OER, and secondly, envisage some simple possibilities for revising OER.

D4.2.1 | Be able to identify and distinguish a modifiable OER in open format (in particular by ensuring the original design format is available)

OER should use a non-patented open format that can be read by open software and edited¹⁴.

Ultimately, there are very few complex resource formats that can easily be edited by reusers. A good example are audio and video files, which are often exported in different formats from those used to edit them. Image files are often very compressed at export (for the Internet). Consequently, they do not contain their initial creation information such as templates and character police. Other editors, like the popular Articulate, export content in HTML5 format, and use code that users can see. However, the structure uses files like JavaScript, making revision difficult for anyone who does not have training in computer programming.

Luckily, some formats such as the JPG image format allow for revision. Nevertheless, revision means a significant loss of quality if the initial file is compressed, as is the case for most online images. That is why image repositories such as Wikimedia Commons publish several versions of the source file. The original version generally contains 2 to 3 megaoctets¹⁵ of information, allowing users to make an informed choice as to their medium, depending on their aims.

The explosion of popular video platforms (YouTube, Vimeo and VICE) has meant a revolution in teaching spheres. Today, anyone who owns a mobile phone with an integrated camera, a tablet or a webcam can easily capture content with open, free software and publish it for free. Moreover, these video platforms often provide users with powerful online

14• Ramade, 2015, p. 31. Available online at: <http://eduscol.education.fr/sti/sites/eduscol.education.fr.sti/files/ressources/techniques/5973/5973-197-p26.pdf>

15• Ramade, 2015, p. 31. Available online at: <http://eduscol.education.fr/sti/sites/eduscol.education.fr.sti/files/ressources/techniques/5973/5973-197-p26.pdf>

editors that are free and highly effective. This is the case for videos produced with free tools to be published on YouTube. A convincing example of such an approach is described in the video-creating method researched by the Université de Moncton in a Blogger platform (<http://pedagogieinversee.blogspot.fr/p/guide-dutilisation-comment-senregistrer.html>).

Critics will say that most of these tools are not free, because even if they are cost-free and accessible to everyone, their use is enabled by computing giants such as Google that harness global labour to gather content, generate traffic and accumulate profits. Alternatives are being developed alongside these giants by free companies such as Framasoft. They are gaining momentum, despite the fact the fight is unequal. This opposition between the popular and corporate worlds implies a choice that all must face, and which, for practical reasons, is not always the most advantageous.

D4.2.2 | Know the different options for adaptation of an OER (translation, sound, illustration, accessibility, contextualization, etc.)

Here are some practical tips for choosing OER that you would consider revising (by order of priority, from free to proprietary):

- Privilege resources for which you have the source file (by downloading it or requesting permission) and the appropriate editing tools.
- Privilege open software such as the Framasoft tool suite and OpenDocument¹⁶ (ODF format) office application suite. Several other free tool suites are available online, but before using them, you should ensure they are reliable.
- Moreover, several types of files such as image (jpg, png and gif) and PDF files can be downloaded from the Internet and edited.
- It is often possible to copy and paste text, take a screen shot and capture audio or video content. In any case, ensure that these resources are free and that you have the correct tools to edit them or use a similar retrieval method.
- Finally, cloud tool suites are now more enhanced than ever. This is the case for Google Drive documents¹⁷, which are powerful and cost-free (but not free). The documents you create with them can be shared, whether in “read only” mode or “editing” mode. This is also the case for the proprietary suites that have been shared on the cloud: Win-

16• <https://en.wikipedia.org/wiki/OpenDocument>

17• www.google.com/drive

dows 10 and its Office application suite for instance, or Apple and Adobe. However, as this software is proprietary, you must have the right software to download the resource and revise it.

The Internet is mainly in English. In this context, speakers of other languages often need to adapt their content by translating it. To do so, you can access powerful online translation tools. Google’s help centre, for instance, indicates how the translation tool is directly integrated into the Chrome address bar:

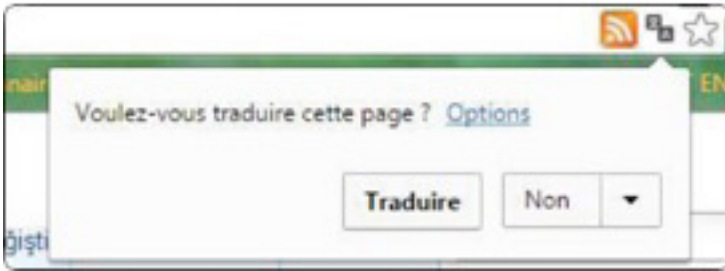


Figure 6. Translation option on Google Chrome.

To translate a word or expression, it is also very easy to type directly into the address bar on Chrome, or the Google search bar in other browsers such as Opera. An example is “traduction: apple” for the French equivalent.



Figure 7. Google’s intelligent search function in the Chrome search bar. Click on the button “Open in Google Translate” (at the bottom right-hand side of the window) to access the help centre and the Google translation tools.

It is also possible to translate whole texts thanks to Google Drive's integrated translation function. You just need to copy the source text and paste it into a Google Drive page. The translation function is under the Tools tab.

D4.3 | Remix OER

Ability 4.3, *Remix OER*, mainly addresses licence constraints when it comes to creating OER from existing OER. The first capability includes a case study to illustrate the process. The second examines the scenario in which designers wish to integrate content that is not expressly copyright-free to their OER.

D4.3.1 | Know how to create an OER comprising various OER taking into account the specificities of licences and their potential for dissemination

Let us take it as a given that, on one hand, the teacher has assembled their teaching content by gathering their personal notes and the OER they would like to integrate into a new resource that suits their teaching goals, and, on the other hand, that they are able to revise an existing OER, namely by selecting it according to its levelling potential. Let us now examine a case study taken from the video "Creating OER and Combining Licences"¹⁸.

"Let's watch Michelle as she develops a chapter for an open textbook on metabolism. Michelle has been teaching metabolism for years, so she has already developed the text of the chapter from her notes. But, she needs some illustrations, specifically on the Krebs cycle and the electron transport chain. She'd also like to find some exercises to accompany the text."

There are many places to find OER such as Flickr CC (www.flickr.com/creativecommons), OER Commons (www.oercommons.org), Connexions (<http://cnx.org>), Internet Archive (<http://archive.org/index.php>) or open.michigan (<http://open.umich.edu>). Michelle goes to Flickr CC at www.flickr.com/creativecommons. That brings her to a collection of all the Flickr images that have Creative Commons licences. She quickly finds the images she's looking for, both with CC BY licences. For exercises, she logs into The Orange Grove (www.floridashines.org/orange-grove), Florida's digital repository where a wide range of OER are

¹⁸ The following section is a transcription of the video "Creating OER and Combining Licences", produced by The Orange Grove Repository, Florida (United States); available online on YouTube: www.youtube.com/watch?v=Hkz4q2yuQU8

available¹⁹ Here, she searches for “electron transport chain”, and turns up some exercise test questions also licensed CC BY.

The next step consists in adapting the OER she has found so that they are suited to her context. “Because there are no restrictions on these images or exercises, Michelle is free to modify them to suit her needs.

She resizes and crops the images and writes captions for them. Then, for each image, she provides the specific Creative Commons licence with a link back to its licence deed. Next, she writes the creator’s name, linking back to the Flickr site where she found the image.

**Figure – Electron Transport Chain
CC BY | SciGraphics**

She also adds some references to the images in her text. She then adds the exercises at the end, removes two that do not belong in her chapter, provides attribution to the creator and links back to the resource.

Then she uses the accessibility checker utility in Microsoft Word, which spots content that may pose challenges for persons with disabilities.”

As in any creative process, the previous scenario is relatively typical of OER creation, because the author creates from ideas and existing material, searching for and reorganizing ideas, and presents her material to achieve a new product. This process alone demonstrates the importance of protecting the free circulation of ideas and content to kindle innovation.

The reader will have noticed the care Michelle took to check that her material was accessible, a precaution that is still too seldom taken today. As a rule, only governments and large corporations take the time to put these finishing touches to their products. Let us hope that one day, this practice is as widespread as the precaution of making one’s website adaptable to mobile devices, which is now widely adopted.

19• This example is adapted to English speakers, and uses examples of English-speaking repositories. Several examples of similar repositories are given throughout this document. It is up to each learning community to create, discover and enrich the repositories that suit their particular needs.

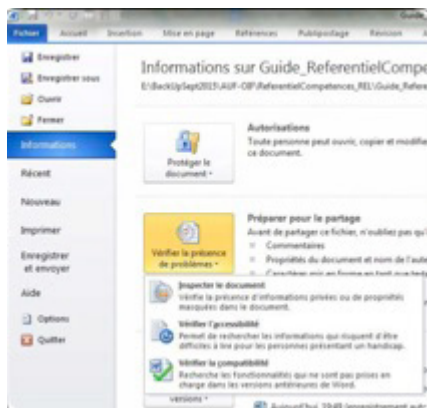


Figure 8. Accessibility checker in MS Word 2016.
The interface and functionalities vary according to the editors.

D4.3.2 | Know how to create an OER comprising various OER and content that is not open within the constraints associated with this type of composite work and specifying the rights associated with the individual content

Sometimes, teachers consider that they must resort to copyright-protected material. There are only two possibilities if they want their composite work to bear a Creative Commons licence.

First, teachers can invoke the statutory fair use exception in their country. This exception is relatively limited in the United States, where the only examples of exceptions are statutory²⁰. It is more comprehensive in countries such as Canada, where fair use stems from a reasonable test that courts apply in disputes²¹. Finally, in France and Europe, the educational exception²² is considerably more flexible by virtue of certain agreements established with France's Ministry for Education, Higher Education and Research (MENESR) and the *Confé-*

20• Wikipedia: https://en.wikipedia.org/wiki/Fair_use

21• Wikipedia: https://en.wikipedia.org/wiki/Fair_dealing_in_Canadian_copyright_law. For French references, see also *Le devoir de l'usage équitable (Fair Dealing)*: <https://tribuneci.wordpress.com/2016/03/22/le-devoir-de-lusage-equitable-fair-dealing>, and the copyright guide published by HEC Montréal's Myriam et J. Robert Ouimet library: http://libguides.hec.ca/droit_auteur/definitions.

22• Wikipedia: https://en.wikipedia.org/wiki/Copyright_law_of_France

rence des Présidents d'Université (CPU, or association of university vice-chancellors)²³

If the use of a copyrighted work does not come under authorized exceptions, teachers must ask the author's express permission. Evidently, the same considerations for harmonizing licences apply when, as well as wishing to incorporate a copyright-protected work, creators wish to combine it with other OER that have various licences. Needless to say, such cases are rare and should be avoided.

D4.4 | Co-create OER

In terms of co-creation, we will address two capabilities: the different modes of co-creation and the precautions to take before starting a collaborative work.

D4.4.1 | Distinguish between the different modes of co-creation in order to use them wisely for the creation of OER

There are three main modes of co-creation: mutualization, cooperative work and collaborative work.

The aim of mutualization is to pool resources to form a larger collection (e.g. a databank). The different players can work relatively independently, and they can also consult one another to set up a consistent indexing system, or to share out different sub-sections.

The aim of cooperative work is to create one or several resources by dividing the main task into smaller tasks, which are more or less independent, from the outset. These tasks either concern the content or creation procedures (for example, at the very beginning, the group divides up the sub-themes: one person takes the graphics, another sound, etc.).

Collaborative work implies creating one or several resources by collaborating from the beginning to the end, and without distributing tasks. Everyone contributes by collaboratively discussing each of the parts. This is the most complicated working mode to set up, because

23• Éduscol – Droit d'auteur et exception pédagogique (Copyright and educational exception): <http://eduscol.education.fr/numerique/textes/reglementaires/aspects-juridiques/droit-auteur>

it requires much interaction and decision-making²⁴.

Open licences provide an extremely propitious environment for these different modes of co-creation, as, from the outset, they settle matters relating to user rights. Open licences thus secure the players' different contributions.

Different types of collaborative tools can help to set up co-creations, ranging from the simplest (e-mail discussions can sometimes be enough to conduct very productive collaborations) to code-sharing tools (such as the Apache Subversion software, aka SVN, widely used in open-software communities).

There is a range of tools between these two extremes, including:

- online file storage and versioning tools;
- instant or differed messaging tools;
- tools allowing several people to work simultaneously on different documents;
- planning and error-management tools.

D4.4.2 | Identify the contributors involved in the creation of OER by establishing and clearly stating each of their levels of contribution and their intellectual property

Before starting to collaboratively create OER, it is strongly recommended to minimize the legal problems that could arise between collaborators by clearly defining each person's responsibilities. There are two main possibilities for creating OER²⁵.

1. Collaborative works

In this case, each person's work can be identified and attributed. It is thus advisable to have the co-authors sign a declaration by which they place their work under a specific open licence, written in extenso, before beginning work. As well as limiting subsequent claims, this precaution enables co-creators to work with greater serenity, as each fully agrees to their role.

24• As an example, read "How to write modifications" on www.openoffice.org, regarding collaborative work under Open Office.

25• For more information, see Jean, 2011.

2. Collective works

Works are only collective if they satisfy two conditions: the project supervisor is a person or institution, association or foundation, and the work is collaborative to such a degree that it is impossible to discern each person's contribution (e.g. writing a dictionary). In this case, there is less need to have the authors sign a declaration at the beginning, especially as their greater number and sometimes fleeting participation can make this difficult.

D5

Sharing OER

ABILITIES	CAPABILITIES
D5.1 Choose a licence for an OER	1. Select an appropriate licence for your OER
	2. Recognize which licences are less suitable for reuse when several of them are combined
D5.2 Assign a licence to an OER	1. Assign a Creative Commons licence to a resource
	2. Demonstrate best practices in the attribution of authorship, for both the authors of the OER and for your own creations
D5.3 Publish an OER	1. Use an OER within its information envelope and its licence to ensure usability
	2. Make your resource available in every way possible
	3. Identify the major OER repositories in which OER creators can publish their creations
D5.4 Promote an OER	1. Understand the lifecycle of a resource
	2. Use social networks to publicize OER
	3. Identify communities of practice to discover and analyse the uses of OER

D5.1 | Choose a licence for an OER

Ability 5.1, *Choose a licence for an OER*, examines the questions that creators should ask themselves before choosing a licence (Capability 1). It also goes back to the previous case study to illustrate some of the practical difficulties that arise when choosing a Creative Commons licence (Capability 2).

D5.1.1 | Select an appropriate licence for your OER

Before selecting a Creative Commons licence, you should think about the rights that, as the author of the work (you are recognized as the “rights holder” in CC terms), you wish to grant users (the “licensees”). You must also know the basics of the CC licensing system so that you do not regret your choice, because it is irrevocable.

As soon as a work is published under a licence, that licence can be neither changed, nor revoked. The Creative Commons FAQ thus asks: “Are you aware that CC licences are not revocable? You are free to stop offering material under a CC licence at any time, but this will not affect the rights associated with any copies of your work already in circulation¹.”

Moreover, CC licences are not suitable for software, trademarks or logos; nor can they be assigned to works belonging to the public domain².

The latest version of CC licence is the CC 4.0 International License, which we recommend that you use. This version enables all CC licences to be used all over the world. As well as this guarantee, all CC licences allow authors to retain the authorship of their works, while ensuring they are credited and cited in the way they would like.

That said, the CC BY (Attribution) licence allows the maximal use and dissemination of your resource: users can distribute, remix, build upon and revise it, even for commercial purposes, provided you are credited for the original creation.

The next question to ask yourself is whether you will allow the commercial use of your work. You should know that adopting the NonCommercial (NC) clause does not prevent you, as the rights holder of the work, from using it commercially. However, choosing to obstruct others’ commercial use is a first level of restriction that can have unforeseen consequences.

1• CC Frequently Asked Questions, for licensors > Choose a license > What things should I think about before I apply a Creative Commons license? Available at: <https://creativecommons.org/faq/#what-things-should-i-think-about-before-i-apply-a-creative-commons-license>

2• Consult the CC Frequently Asked Questions (<https://creativecommons.org/faq/>) to learn more about the basics of this licensing system.

- For instance, not all educational uses are necessarily non-commercial, so choosing the NC clause could prevent schools from using your work.
- An NC licensed work is incompatible with remixing, because it must be excluded from any composite work using a CC SA (Share Alike) licence. Wikipedia content, for example, is offered under the CC Attribution-Share Alike licence³.
- Consider whether you envisage a commercial dimension that you want to protect, as the NC restriction may not satisfy those needs. For instance, the NC licence does not obstruct commercial uses that are exceptions to copyright (e.g. fair use), and even non-commercial uses of your resource could be harmful to your intended commercial exploitation.
- The NC clause could be prohibited by the policies and publications of the institution(s) you wish to work for, or the funding institutions that back your work. The CC definition of “non-commercial” may also differ from your publisher’s definition, and could thus prevent you from using it, and even from using any CC licence.
- It is often in the interests of public policy-makers to consider less restrictive licences such as CC BY or CC0.
- Finally, the NC clause does not match the definition of “open knowledge” (<http://opendefinition.org/od/2.1/en/>) or “free cultural works”, a restriction that could prevent the work’s publication in commons such as Wikipedia and Wikimedia Commons.

It is also important to bear in mind that the NC clause applies to the use that is made of the resource, and not to the identity or vocation of the person or institution using it. Thus, a non-profit institution could infringe the NC clause if it used the resource for fundraising purposes⁴.

The two other Creative Commons restrictions are easier to gauge. Your next choice should be whether you allow others to remix, build upon and revise your work. If you want it to be distributed unchanged and whole, you should opt for the No Derivative Works (ND) clause. If, as the rights holder, you choose to allow changes to be made to your work, you

3• That said, in exchange, a CC BY work such as an image can be incorporated into Wikipedia, provided you keep all the copyright notices in the Wikipedia item intact, give the appropriate attribution for your work and respect the other CC BY terms.

4• Consult the Creative Commons Interpretation Guide for the NonCommercial license element: https://wiki.creativecommons.org/wiki/NonCommercial_interpretation

may also choose to ask users to redistribute derivative works under the same licence as the original. This concept is known as “Share Alike”. It is one of the mechanisms allowing digital commons to grow as time goes by. The “Share Alike” option is inspired by the GNU General Public License (GPL), which is used by many open software projects.

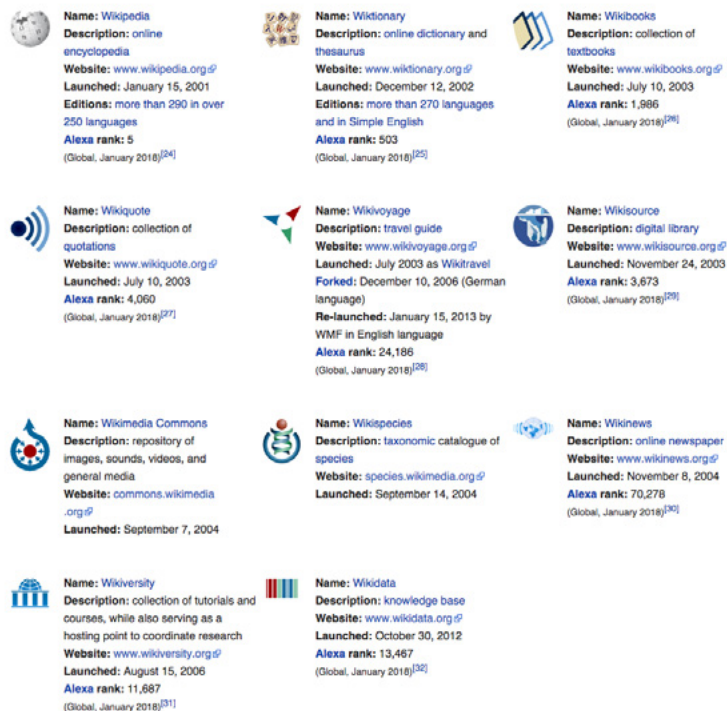


Figure 9. The eleven Wikimedia Foundation’ projects, with CC-BY-SA licence.

D5.1.2 | Recognize which licences are less suitable for reuse when several of them are combined

Not all licences are as easy to combine as Michelle’s (see Remix OER: 4.3.1). According to Ramade (2015), the CC licences suited to OER are those allowing modifications (and thus not bearing the ND clause). To understand how choosing a licence can be an art, let us explore the second part of the aforementioned video⁵.

5. The following section is a transcription of the video “Creating OER and Combining Licences”, produced by The Orange Grove Repository, Florida (United States); available online on YouTube: www.youtube.com/watch?v=Hkz4q2yuQU8

“Michelle used the CC BY licence, which made licensing her new work easy. But not all licences play well with others. Let’s consider some situations where the licences being combined are more restrictive (such as the CC BY-NC-SA licence).

Suppose you are developing a work and you want to use some other CC licensed works within yours. If you adapt or derive works offered under CC licences, you must not only follow the terms of the licences involved, but also choose a licence for your work that is compatible with the licences of the works you are using.

If the licence of a work you want to use is not compatible with yours or another work you plan to use, search for a comparable work with a compatible licence, or try to contact the rights holder and request permission to use the work under your licence.

So which licences are compatible, and which are not?

The CC BY licence is compatible with any other CC licence. So you can use it, with attribution, of course, any way you like!

Sometimes, the BY licence has the No Derivatives, or ND, provision. The ND provision prohibits the work from being adapted, revised or combined at all. With a Share Alike, or SA, provision, your new work must have an identical licence as [sic] the source content. In other words, this licence lets others remix, tweak and build upon a work, as long as they credit the creator and license their derivatives under identical terms.

Finally, the NonCommercial, or NC, provision makes the licence compatible with any of the three licences with an NC component: BY-NC itself, BY-NC-SA or even BY-NC-ND.

This is Andrea and Charles. They’re each developing their own chapters of an open textbook, to be licensed separately. When they have questions about which licence to use, they ask Beth, the scholarly communications librarian. Beth is considered the leading expert on campus on CC licensing. [...] Andrea has found two resources that she wants to use with her own writing. One is an extensive table with useful information for students. The other is a diagramme that shows the relationships among complex variables in a way that makes them easier for students to grasp.

The table is found in a work with a CC BY licence. The diagramme carries a CC BY-NC licence. She is confident she can use these assets for her open textbook chapter, but she wonders what licences she can apply to her finished work.

Considering the stipulations of the BY-NC licence, she figures she can use a BY-NC, a BY-NC-SA or a BY-NC-ND licence... Right, Beth? Great!

Now, it's Charles' turn. Charles also has two resources that he wants to use with his chapter. One is a photograph with a BY-SA licence, and the other is a set of exercises with a BY-NC licence. He figures he can cover them both by licensing his chapter with a BY-NC-SA licence... Beth? 'No way, Chuck! Not unless you obtain permission from the photographer!

Share Alike means you have to use the exact same licence, and the BY-NC licence of the exercises won't let you do that.' 'Well, what if I use this resource?' 'CC BY licence? You're good to go.' [...]

When it comes down to it, some combinations of licences just aren't compatible. And some combinations, like Andrea's, give several options. Fortunately, the number of resources with When it comes down to it, some combinations of licences just aren't compatible. And some combinations, like Andrea's, give several options. Fortunately, the number of resources with open licences is huge, and it's growing every day, so don't give up if the work you want to use has an incompatible licence. There's [sic] plenty."

If you wish, you can go back to the aforementioned game developed by David Wiley (Capability 3.2.2) to check your ability to remix OER (<http://indstudy1.org/univ/355460515034/Flash/Lesson2/PracticeVersion.html>) bearing different kinds of licenses.

D5.2 | Assign a licence to an OER

Ability 5.2, *Assign a Creative Commons licence to a resource*, allows you to discover the OER licence chooser (Capability 1) and consider some best practices in authorship attribution (Capability 2).

5.2.1 | Assign a Creative Commons licence to a resource

Now that you understand the basics of the CC licensing system and the implications of the different permissions, assigning a licence to your educational content to make it open and allow others to share it is very easy, thanks to the CC licence chooser (<https://creativecommons.org/choose/?lang=en>).

Let us take Michelle from the “Creating OER and Combining Licences” video as an example⁶.

“Finally, she adds a Creative Commons licence. Because the other content she is using has CC BY licences, the least restrictive licence available, she is free to choose the licence she wants. She goes to the Creative Commons page to choose a licence, she answers a few questions and her licence is selected automatically.

She then fills in some information to help others provide proper attribution for her work, and the chooser automatically provides text and code for her document. She copies the text and pastes it onto the first page of her chapter. A job well done [...]!”

Note that the optional section of the licence chooser allows you to personalize your licence and type in the information necessary for others to correctly attribute your work. It is recommended to enter as much information as possible.

Here is a final summary of the steps to follow to attribute a CC licence to your resource:

1. Check (if the final OER includes other OER) that the CC licences of the resources you want to combine are compatible, and that the ensuing licence provisions are suited to the way you want to use the resource.
2. Select a suitable licence depending on the way you want to use the resource.
3. Use the CC licence chooser to select the right CC licence.
4. Copy the HTML code provided and integrate it into your OER if it is to be used online.
5. Ensure that all the licensing information is provided explicitly wherever your OER is distributed.

5.2.2 | Demonstrate best practices in the attribution of authorship, for both the authors of the OER and for your own creations

The whole structure of the CC licensing system, as well as vast planes of the idea of “open”, rest on the idea that the creator of a work can be recognized without forbidding everyone else from using it as inspiration or redistributing it. This is why it is imperative to correctly and universally attribute others’ works when you use them, and follow some simple rules to

⁶• The following section is a transcription of the video “Creating OER and Combining Licences”, produced by The Orange Grove Repository, Florida (United States); available online on YouTube: www.youtube.com/watch?v=Hkz4q2yuQU8

define your own authorship. Here are some best practices in attribution⁷. Take the following photo from Wikimedia Commons, for example:



Figure 10. Photograph by Laitche, taken from Wikimedia Commons.

The ideal way of expressing authorship for this work would be:

“Purple beautyberry, October 2015”
by Laitche, distributed under the CC BY-SA 4.0 license.

This is an ideal reference, because it includes the following information:

- title and date: Purple beautyberry, October 2015;
- author: Laitche – with a link to the author’s site;
- source: https://commons.wikimedia.org/wiki/File:Purple_beautyberry,_October_2015_-_Stacking.jpg?uselang=fr;
- licence: “CC BY-SA 4.0” – <https://creativecommons.org/licenses/by-sa/4.0/deed.fr>, with a link to the licence.

⁷ Taken from https://wiki.creativecommons.org/wiki/Best_practices_for_attribution

Now say that you have decided to modify the photo slightly:



Figure 11. Laitche's modified photo, taken from Wikimedia Commons

You must attribute it under the same licence, as follows:

- “Purple beautyberry, October 2015” by Laitche (www.laitche.com), distributed under the CC BY-SA 4.0 license (<https://creativecommons.org/licenses/by-sa/4.0/deed.fr/>) Semi-tones, pastel effect; or
- This photo, “Harvests 2015”, is a creation derived from “Purple beautyberry, October 2015” by Laitche (www.laitche.com), used under the CC BY-SA 4.0 license (<https://creativecommons.org/licenses/by-sa/4.0/deed.fr/>) “Harvests 2015”, published under the CC BY-SA 4.0 license (<https://creativecommons.org/licenses/by-sa/4.0/deed.fr/>) by Hergé.

To simplify matters, there are some free plug-ins that automatically integrate licence information to the Open Office (https://wiki.creativecommons.org/wiki/OpenOfficeOrg_Addin) and Microsoft Office (www.microsoft.com/en-us/download/details.aspx?id=13303) application suites.

D5.3 | Publish an OER

Ability 5.3, *Publish an OER*, comprises three capabilities. First, respecting the terms of the licence and the information linked to the OER, and next, publishing within the context of

an OER lifecycle (Capability 1). Capability 2 recalls the importance of publicizing your OER, while capability 3 offers publication repositories to complement the repositories already broached in Section 2.1.3.

5.3.1 | Use an OER within its information envelope and its licence to ensure usability

It has already been mentioned that two normative fields must be considered to ensure the accessibility and potential for discovery of OER. These are, respectively, the W3C standard (www.w3.org) for the accessibility of Internet content (4.1.2) and the MLR⁸ norm for describing resources (2.1.4). You will remember the nine fields to fill in to give the resource's basic information. You will also remember the nine best practices recommended by UNESCO to ensure its accessibility.

This means that, if you are not the author of the OER, it already reaches you with its information envelope (metadata), if it is well tagged, and its technical quality, so all you have to do is transfer it, without reducing the quality of the content or omitting any of the information pertaining to it. It is thus always recommended to type the resource's information directly into the header of the HTML page, in the <Head></Head> section, so that search engines can index it and display it as a result for relevant requests. This practice will considerably enhance the visibility of your OER.

If you are the author of the OER, you must provide the information pertaining to the attribution of rights (licence) and the description of the resource (metadata), in accordance with the abilities described in "Creating OER" (D4).

⁸ The MLR norm seems to be available only in English. REFRER, the French-speaking network of reusable educational resources, describes it in the following terms: "In 2011, a new international norm was published by the International Standards Organization (ISO), the largest international standardization institution: the Metadata for Learning Resources (MLR) norm (ISO/IEC 19788). The MLR norm is based on the Resource Description Framework (RDF) standard developed by W3C to make metadata processing easier. It aims to integrate the DC and IEEE LOM standards, in the open perspective of linked data or the semantic web." (<https://goo.gl/IKB0Bh>). The GTN-Quebec (Quebec working group on norms and standards – www.gtn-quebec.org)'s work on the Normétic profile of the MLR norm is, to date, the most complete French-language source on the subject.

5.3.2 | Make your resource available in every way possible

There are a great many OER, and their number is constantly increasing. This is because of the enthusiasm linked to the idea of open, universal education as a fundamental human right; an idea that has been gaining ground since the first Global OER Forum in 2002⁹.

The United Nations' SDG 4¹⁰ reminds us of the importance of promoting the OER movement, particularly in French, by involving participants at every level, and particularly teachers, who we would like to see supported by their governments. In accordance with this vision, the *Guidelines on Open Educational Resources (OER) in Higher Education*¹¹ rightly recommend that academic staff:

- leverage networks and communities of practice;
- promote OER through publishing about OER;
- provide feedback about, and data on the use of, existing OER.

All distance-learning players have a role to play. Let us take the example of the information pertaining to the OER community of practice (<http://mooc-rel.blogspot.fr/search?q=commons>), from the perspective of the participants of the IOF's 2014 massive, open, online course (MOOC; available online at: <http://rel2014.mooc.ca>¹²) on OER.

If each participant strives, within their community, to communicate their discoveries and share their creations on social media, the French OER movement and that for open, flexible education for all will continue to rise towards a genuine, practical adoption.

9• This page of UNESCO's website describes OER in terms of their definition, history and important events. You can also find different resources pertaining to OER: www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/

10• "Insure inclusive and equitable quality education and promote lifelong learning opportunities for all" - <http://unesdoc.unesco.org/images/0021/002136/213605E.pdf>

11• Guidelines on Open Educational Resources (OER) in Higher Education (2011, 2015), UNESCO and Commonwealth of Learning, points 2.3.f, h and i, p. 10-11 of the PDF version: <http://unesdoc.unesco.org/images/0021/002136/213605E.pdf>

12• In this example, we simply conducted a search (keyword: "Commons") on the site of the 2014 OER MOOC project, where all speakers and participants were invited to publish and think together to complete the project. This is a collaboration method based on a powerful tool. Everyone must determine their method.

5.3.3 | Identify the major OER repositories in which OER creators can publish their creations

Section 2.1.3 of this guide lists more than 16 resource banks, repositories and websites where teachers can find OER. However, very few of these deposits can publish resources from outside their community. There are, however, a considerable number of alternatives available to authors.

1. Become partners with an OER-oriented company. A French example is Éducation & numérique (Education & Digital; available online at: <http://catalogue.education-et-numerique.org>).
2. Publish on major public platforms such as Wikimedia Commons, Flickr, Jamendo, etc.
3. Establish your own community by adopting open blog or wiki tools.
4. Explore new economic models based on the “open” concept such as the Creative Commons France partnership (<http://creativecommons.fr/ascribe/comprendre>) and the English-language Ascribe (www.ascribe.io).

D5.4 | Promote an OER

Ability 5.4, *Promote an OER*, places OER in the broader context of their lifecycle (Capability 1). The second capability identifies social media as a way to promote OER, and the third reinforces the importance of communities of practice.

5.4.1 | Understand the life cycle of a resource

The Learning Object Metadata (LOM) standard describes a lifecycle as follows¹³.

The “lifecycle” of a product or service refers to the phases that the product or service undergoes from its design to its end. These phases are often cyclical, and can go from the initial phase of a resource project, its development, validation and exploitation, to the last phases, in which it is either archived or deleted. This information can be repeated as often as required.

It is important that OER users, and especially designers, understand that the lifecycle of OER can be complex, from their initial creation until they are melded with or integrated into other OER. Understanding this makes it possible to see OER not as finished products, but rather as objects in constant, potential recreation.

13• [www.lom-fr.fr/scolomfr/la-norme/manuel-technique.html?tx_scolomfr_pi1\[detailElt\]=10](http://www.lom-fr.fr/scolomfr/la-norme/manuel-technique.html?tx_scolomfr_pi1[detailElt]=10)

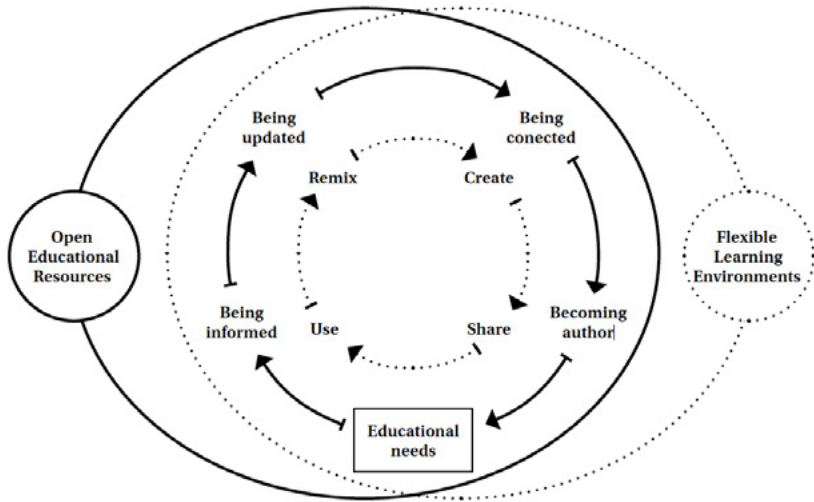


Figure 12. Lifecycle of an OER in the teacher's professional development.

Raffaghelli (2014) draws an interesting parallel between the OER lifecycle, consisting of creation, sharing, use and remixing, and teachers' professional development (Figure 12).

Her experiment suggests that the creativity required to use OER is the basis for professional development throughout teachers' lives.

We have also tackled the OER lifecycle from the perspective of resource bank managers; a far broader perspective, which reflects contextual diversity and invites us to keep an open mind so as to innovate while crafting our own solutions.

It should thus be remembered that after their creation and publication, OER will be cited and reused in different contexts. Sometimes, they will be integrated into other creations, either in whole or in part. The technical format of OER is thus particularly important to encourage such uses.

5.4.2 | Use social networks to publicize OER

Most OER creators publish and disseminate their creations on social media (e.g. Facebook, Google+ and Twitter). Their personal fame guarantees the visibility of their creations, as

they adopt convincing practices at the beginning such as the choice of licence and description of the resource, not to mention its relevance and overall quality, including for teaching.

Moreover, we have established that sharing platforms are now so powerful that there is no need to do any more to ensure the potential for discovery and visibility of the OER produced by the members of the community.

5.4.3 | Identify communities of practice to discover and analyse the uses of OER

Communities of practice are interesting, because they often enable learners to adopt best practices in using OER. The implementation of a resource can be more important than the resource itself, due to learning momentum. Such a momentum is a true asset for teachers, especially as discussions abound in every direction. Whoever has gained such experience from a community of practice can, in turn, contribute to their community of practice.

In the sphere of education, communities of practice come under two main categories:

- the formal communities gathering different institutions (e.g. all the teachers of one subject within a certain academic region or geographic area) or associations (e.g. in France, Weblettres, which gathers French professors, and Sésamath, which gathers maths professors);
- the informal communities that spring up on social networks. Examples are Facebook groups or informal communities that gravitate around a hashtag on Twitter.

The formal communities are often longer-lasting, but they are not as flexible as the informal communities, which can spring up and disappear rapidly, with teaching evolutions and demand.

OER players, be they teachers, managers, designers or even students, should participate in an OER community of practice to contribute to the influence of this important force for education.

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