Open Educational Resources

Basic concepts, challenges, and business models

Executive Summary

Besides research, education is the raison d'être of each university. Education can help close equity gaps and maintain social cohesion between and within countries. In this context, the digitisation era offers new opportunities, for example, in the form of distance and online learning. However, innovations can also come with challenges, such as employed and unemployed people requiring to adapt to a progressing working environment at ever shorter intervals (life-long learning). Consequently, it is increasingly important to gain free access to up-to-date educational materials about a wide range of subjects and at multiple academic levels.

In this document, we introduce the concept of *Open Educational Resources* (OER). We start with establishing a definition of OER, what is needed to call educational materials OER, and the differences in comparison to related concepts, such as *Massive open online courses.* We then address the question of who can benefit from OER. It reports on the incentives to publish OER taking into account the perspectives of the involved stakeholders, i.e., the general public, universities and lecturers, and students. Afterwards, we pay attention to the challenges that come with OER. Subsequently, we provide a list of potential business models around OER, their underlying concepts, benefits, limitations, and projects making use of them. We also consider the paradox that OER are not intended to generate revenue but that ignoring income can make OER unsustainable. The document concludes by outlining possible steps to realize OER (e.g., organizing a round table to initiate a discussion about how to realise OER at the faculty level).

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Preface

Every university seeks to educate students, PhD candidates, research staff, and the public. The more these stakeholders can learn in a university, the higher is its visibility, resulting in more enrolments and income. One might conclude that the resulting competition among universities makes it impossible to publicly release educational resources (e.g., lecture slides and exercises), which would be equivalent to losing the competitive advantage. Another worry is that fewer people will pay tuition fees if universities offer free courses (Janssen et al., 2012). Despite these concerns, publishing teaching materials as so-called *Open Educational Resources* (OER) is an often-required practices[1,2].

For this reason, the relevancy of OER increases for universities in general and ITC in particular since capacity development and institutional strengthening are essential pillars of our mission. Hence, ITC needs to find answers to several questions regarding how ITC positions itself concerning OER:

- Does ITC contribute to OER, and if so, how?
- How to use OER to support ITC's life-long learning strategy?
- How could (distance) teaching at ITC based on OER look like in five years?
- What are potential business models around OER?

Finding answers to these questions is also vital to the University of Twente's *Shaping2030* agenda, which pays particular attention to life-long learning, public education, and distance teaching. Consequently, OER do not only conform with *Shaping2030* but play an essential role in achieving its goals.

This document does not aim to provide concrete answers to these questions but to initiate a discussion at ITC. A round table with all the involved stakeholders is required to have a common understanding of what OER means, what their benefits and limitations are, and which opportunities exist to make OER sustainable. Hence, this document serves as a discussion basis for deriving concrete OER policies and guidelines.

Introduction

In the following, we will learn about the meaning of OER, differences in related concepts, and licenses.

OER Definition

There is consensus in the literature regarding what *open* means. According to the *Public Library of Science* (PLoS), digital resources are *open* if everyone gains *free*, *permanent*, and *immediate* access to them via a *public online repository* (Downes, 2007). Open often means that people can *reuse* and *distribute* the resources without any restriction as long as they give credit to the original author (more about this issue in the subsection on licenses). Similarly, FreedomDefined.org describes the *four freedoms*, i.e., the freedom to *use* the work, *apply* the knowledge, *copy* and *disseminate* it, and *change* and *redistribute* modified or derivative works. The *5Rs* by Wiley (Elder, 2019) summarise what people can do with open resources:

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[1] UNESCO's OER initiative: https://www.unesco.de/bildung/open-educational-resources, last access for this and the following URLs: 30th April, 2021.
[2] The Cape Town Open Education Declaration: https://www.capetowndeclaration.org/read-the-declaration

- *Retain* the right to make, own, and control copies
- *Reuse* content in its unaltered form
- *Revise* and modify the content
- *Remix* it with other content to create new content
- *Redistribute* the original as well as modified versions

The Open Knowledge Foundation[3] takes one step further. *Open* resources should be available in an open, editable, and machine-readable format.

Based on these notions of *open*, Wiley et al. (2014) provides the following definition of OER:

> "Educational materials which use a Creative Commons license or which exist in the public domain and are free of copyright restrictions are OER."

Similarly, UNESCO[4] states:

> "OER are 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."

Consequently, resources that are not free and open-licensed cannot be modified and redistributed. These restrictions are not in line with the idea of OER (Elder, 2019). Hodgkinson-Williams (2010) thinks beyond OER since being able to benefit fully from OER also requires the pedagogical context. Hence, she also considers the open sharing of teaching practices and the learning experience (e.g., providing feedback and grading) known as *Open Educational Practices* (OEP).

Differences to related concepts

The term OER is often used interchangeably with related concepts (Weller, 2020). *E-learning*, i.e., online education and support, is a broader concept. OER can be an E-learning resource, but not every E-learning resource is OER since it can still be a paid course or not released under an open license. *Open learning*, i.e., the inclusion and removal of barriers, is not a requirement for OER. Most confusion exists between OER and *Massive open online courses* (MOOC). MOOCs are free online courses but usually not open-licensed (Weller, 2020). It is thus not possible to modify, remix, and redistribute the materials. MOOCs also usually do not provide educational practices. Consequently, MOOCs are not OER (Darwish, 2019). Besides, MOOCs have several shortcomings, such as low completion rates. The idea to democratise learning is limited since the best learners were already well educated (Weller, 2020). However, it remains unclear if these limitations apply to OER as well.

Licensing

Licenses clarify if and how output can be reused, disseminated, and modified (Braak et al., 2020). Hence, creators can keep control over their output since violation can result in accusation. Licensing is consequently an essential requirement to accomplish the FAIR principles[5] (see *R1.1. (meta)data are released with a clear and accessible data usage license* (Wilkinson et al., 2016). Wiley (2014) observed that many OER definitions pay attention to copyright and licensing. The most common license for releasing OER is *Creative Commons* (CC), which can be used, for example, for books, datasets, articles, and photographs. CC has several components to indicate different degrees of openness:

- *Attribution* (i.e., cc-by) means credit must be given to the creator.

- *Share Alike* (i.e., cc-by-sa) means that any modified derivate must be released under the same license.
- *Non-commercial* (i.e., cc-by-nc) prohibits using the materials for commercial purposes.
- *No derivates* (i.e., cc-by-nd) means that others must not change the materials.

These components can be combined to create more restrictive licenses (e.g., cc-by-nc-nd or cc-by-nc-sa). However, restrictive licenses are not conforming with the idea of OER. Furthermore, materials released under a restrictive license might be incompatible with less restrictive ones making it impossible to remix and distribute derivative works (Percy and Belle, 2012).

Nevertheless, educational resources can also include software, e.g., source code and computational workflows. Such materials can be licensed in many different ways considering several conditions that are not covered by the CC licenses. It is recommended to use tools that help creators choose from the plethora of possible licenses (see, e.g., https://choosealicense.com/). If the project is composed of textual contents and software, it is possible to use multiple licenses.

To conclude, the idea behind OER is to provide unrestricted access to educational materials to everyone. Nevertheless, there is some space to restrict what others can do with OER (e.g., prohibiting commercial purposes) and whether teaching experience should be available, too. Figure 1 illustrates an OER spectrum ranging from *No OER* (an institute does not publish OER at all), over *some OER* (publication of a subset of the materials), to *full OER* (all materials are published). The *gold standard* is *OER + OEP* (an institute publishes OER and makes OEP accessible).

Figure 1: The OER spectrum.

Incentives for publishing OER

Publishing OER requires effort, time, and money, raising the legitimate question of why an institute should invest valuable resources in developing OER.

Educating the public

One reason is the overall goal of a publicly funded university to educate the public (D'Antoni, 2009). Thus, the resulting products and services should be freely available to taxpayers (Hylen, 2006; D'Antoni, 2009; De Langen, 2011). Also, taxes should be used most efficiently by avoiding duplication and supporting reusability, thereby improving the quality of the educational materials (Hylen, 2006). The *United Nations Human Rights Declaration* also expressed this altruistic and ideologic motive: "Everyone has the right to education. Education shall be free... " (Article 26). According to Perryman et al. (2014), particularly people in low- and middle-income countries can benefit from OER. OER can help people from the Global South gain education without committing time and money for attendance (Elder, 2019).

Publishing OER is also in the governments' interest (D'Antoni, 2009; Hodgkinson-Williams, 2010; De Langen, 2011). Access to education can help improve social cohesion and act as a driver for innovation. Due to demographic changes, the number of employees is decreasing, which requires productivity to increase. In this context, an aggravating factor is that accelerating change and innovation can make some knowledge and skills obsolete. Such developments demonstrate the need for new educational models, for example, hybrid education that combines traditional and digital teaching methods

according to the students' needs. Also, life-long learning plays an increasingly important role in closing equity gaps and allowing employees to adapt to a progressing working environment (Hodgkinson-Williams, 2010; Butcher and Hoosen, 2012).

'Selfish' incentives for universities and lecturers

By publishing OER, universities can increase their national and international visibility. Such efforts can also deepen relationships with the public and strategic partners (Hylen, 2006; Hodgkinson-Williams, 2010). An increased visibility is likely if the published materials fill a gap since most OER come from psychology, biology, and mathematics. However, since more and more institutions start publishing OER, more materials are available for specialised topics (Elder, 2019). Consequently, releasing OER will not always improve the own visibility but not publishing OER at all might damage it.

Moreover, OER can be used as a marketing channel ("showcase") and reduce marketing costs (Hodgkinson-Williams, 2010; Law and Perryman, 2017). This form of publicity might attract many students (Hylen, 2006; Hodgkinson-Williams, 2010), generate more tuition fees, and pave the way for new business models (De Langen, 2011). MIT, Open University of the UK, Open University of the Netherlands, and the University of California-Irvine all reported a positive effect of OER on the number of enrolments (Johansen and Wiley, 2011). These studies date back more than ten years and are not necessarily applicable today. It might be interesting to carry out an experiment to investigate the effect of OER on the number of enrolments. Also, OER can help attract alumni as life-long learners (Hodgkinson-Williams, 2010).

Because of an often precarious employment situation, lecturers are less driven by altruistic ambitions (Hylen, 2006). OER can also be beneficial on an individual level, for example, for teaching portfolios as part of applications for academic positions (Wiley, 2007; Geser et al., 2019) and to improve the own visibility (D'Antoni, 2009). Universities can provide an additional incentive for researchers by requiring OER for hiring or promotion. Thereby, they would also adhere to the *Room for everyone's talent* strategy (i.e., focus more on the interconnectedness of education and research) and The Cape Town Open Education Declaration (i.e., increase OER's priority in universities).

Students

Students are a specific group of the public. Thus, benefits, such as reduced costs, time, and physical presence, apply to them as well. Notably, cost savings regarding textbooks and moving might include those who would be excluded otherwise (Elder, 2019). Accessing the materials from everywhere at any time can also help reconcile education and family commitments, address health impairments[6], and make education possible in politically unstable areas[7] (Weller, 2020; Elder, 2019). Furthermore, the students can use the materials to make a more informed decision whether they are interested in the course or not (Elder, 2019). Such support might eventually result in a lower number of dropouts which is also beneficial for universities (Law and Perryman, 2017).

In summary, there are several incentives and motives to create and publish OER. According to the Organisation for Economic Co-operation and Development (2007), the most important ones are: altruism, leveraging taxes, reducing content development costs, providing showcases to attract potential students, offering potential students a taster, and stimulate innovation and development. Hence, direct revenue generation based on OER is not always possible. Income is often achieved indirectly, for example, through visibility, marketing, and high-quality education, resulting in more

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[6] https://ocw.mit.edu/about/ocw-stories/anita-moreno/
[7] https://ocw.mit.edu/about/ocw-stories/tooba-siddiqui/

enrolments and higher success rates (Stacey, 2012). Nevertheless, the section on business models will give a more concrete idea of how to generate income.

Challenges and limitations

Despite the incentives mentioned in the previous section, there are also several challenges and limitations that go beyond making OER financially sustainable.

Lecturers

First, lecturers need to invest some effort, for example, to check whether their materials contain protected or plagiarised content (D'Antoni, 2009). Such cases require asking for permission to use copyright content, deleting it, or replacing it with an openly licensed alternative. It might also be necessary to switch from proprietary tools to open-source software. For example, lecturers might need to change a computational workflow for a geo-spatial analysis implemented in ArcGIS to QGIS. Otherwise, the students not having access to the software can only read the materials but not explore them independently. Suppose the recordings of the lectures are included in OER. In that case, privacy concerns need to be considered, e.g., if teachers do not want to be recorded. Finally, teachers might have a conflict of interest, for example, if they are involved in developing the software used in the lecture and hold the copyright (De Langen and Bitter-Rijkema, 2012). Similar conflicts can also emerge with commercial publishers or software companies involved in teaching (Orr et al., 2015). "Positioning the OER Business Model for Open Education - ERIC." https://eric.ed.gov/?id=EJ979599.

Rewards and Recognition

Another issue is the lack of a reward system that recognises the use and creation of OER (Hylén, 2006). Why not valuing OER in the same way as a scientific paper? A further possibility is to consider OER in hiring and tenure, as it is sometimes done with Open Science[8]. A mind-shift towards OER will also change the wrong perception that free materials are of inferior quality (Wiley et al., 2014). However, this issue is, in part, already mitigated by the excellent visibility of ITC.

Universities

Universities planning to publish OER should also take into account costs. The final costs strongly depend on the implemented business model and the type of OER. The following expenses are fundamental (Downes, 2007):

- Teachers for creating OER and internal quality checks
- Maintenance costs for keeping the materials and exercises up-to-date (can be done by staff or the community)
- Support staff to train lecturers, provide a helpdesk for students, manage marketing, and develop university-wide policies clarify creation and publication of OER, for example, concerning licensing and what can/cannot be shared
- IT support to maintain software and hardware
- Hardware (e.g., server, recording equipment) and software (e.g., recording software, learning platform)

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[8] https://osf.io/7jbnt/

However, revising educational materials and replacing commercial with open-source software can also make purchased software licenses obsolete. Such a transition avoids vendor lock-in and, eventually, saves costs (Tlili et al., 2020; Wiley, 2007).

Students

There are also several limitations from the students' perspective. Through online and distance learning, interaction among students is limited, which also negatively affects the development of critical thinking and problem-solving skills (Affouneh and Khlaif, 2020). Also, students do not receive any feedback on how they performed regarding the exercises unless educational practices, e.g., tutoring, are offered. Another issue is the infrastructure on the students' side, e.g., the availability of computers and stable internet. Finally, employers do not acknowledge all distance learning courses in the same way as traditional qualifications.

While OER can be particularly beneficial for the Global South, there are concerns regarding their role in the use and production of OER. Nowadays, mainly developed countries create OER (Butcher and Hoosen, 2012). This bias might result in the Global South being 'mere clients' of the developed countries who (often unintentionally) might impose their ideas (Kanwar et al., 2010). At ITC, we can mitigate this issue by involving the Joint Education Partners (JEP) "with the aim of facilitating access to ITC education".

Business Models

This section provides an overview of existing business models around OER, including a brief description of the underlying concept, its limitations and benefits, and examples (cf. Downes, 2007; Darwish 2019). Note that the paradox is that generating revenue out of OER is not intended, but ignoring income can make OER unsustainable (Daniel, 2012). Consequently, some of the initiatives listed below are not entirely in line with the OER definition. However, the underlying business models are still relevant.

The **Selling course experience model** (Okoli and Wang, 2015) is also known as "Freemium" (Geser et al., 2019; Maron, 2014). The university offers all educational materials (e.g., slides, texts, data) for free. The students pay for teachers providing so-called *value-added services*, such as answering questions, giving feedback on submissions, supervising exams and theses, and delivering certificates. This model is easy to implement but only works if students recognise the benefit of paying for the services (Okoli and Wang, 2015). Moreover, the provider needs a detailed understanding of the user needs and a large pool of users since not every non-paying user can be converted to a paying client (Maron, 2014). Besides, monetising teaching experience does not fully adhere to OER and OEP (Tlili et al., 2020). Examples are OERu, Udacity, MOOCs, Johns Hopkins Bloomberg School of Public Health, and Harvard University. The *Segmentation model* is a similar approach that relies on selling paper copies in addition to the teaching experience (Wiley, 2007). Considering the advent of more innovative and interactive teaching materials (see, e.g., The Living Textbook by Augustijn et al. (2018)), relying on paper copies might not be suitable for every discipline.

In the **Governmental model,** national and international governmental agencies provide funding for creating OER (Okoli and Wang, 2015). While several agencies prioritise OER (e.g., EU, UNESCO), others, for example, countries might change their political priorities after a legislative period making long-term funding difficult (Geser et al., 2019). Furthermore, the number of funding lines for OER is low and projects usually stop as soon as the funding expires, which limits the project's sustainability (Tlili et al., 2020; Okoli and Wang, 2015). Examples are Commonwealth of Learning, Saylor Academy, and Wikiwijs.

In the **Institutional model** (Geser et al., 2019), a university makes OER part of the own programme and allocates budget for it (so-called "in-kind"). This approach is in line with OER principles, but budget is usually scarce, particularly at universities that assign low priority to OER (Tlili et al., 2020). Moreover, developing OER is cost-intensive, especially if universities want to offer OEP, too. Increasing the tuition fee to cover the costs creates a barrier to students (Okoli and Wang, 2015). This model can be identical to the governmental model if the university is funded by public and not private money. One example is [MIT OpenCourseWare](#).

The **Online Programme** model is realised by transforming the existing presence-based education to online courses (Okoli and Wang, 2015). After enrolling, students can access the content. Funding can come from the budget of the university or student fees. Due to the ubiquity of the digital age, universities will need to implement this model partially. On the downside, this approach is not necessarily open (see paragraph on *E-learning*). Examples are [MIT OpenCourseWare](#), online university offerings, and libraries.

The **Substitution model** relies on cost savings that come with publishing OER, for example, obsolete course management systems, virtual learning environments, or textbooks (Dholakia et al., 2006). The saved budget can be used to fund OER. However, some of the cost savings might require shifting completely to online teaching, which is against a university's idea as a meeting place.

In the **Community-based model,** the members of an OER community or network collaboratively create and use OER. A core team could coordinate the network and generate income by hosting OER infrastructure and organising activities to distribute the content (Geser et al., 2019). Nevertheless, if they leave, the project will likely end as well. One of the main advantages is that the network can be used to peer-review educational resources (Elder, 2019). Disadvantages are that many faculties do not see the long-term value of joining the network with in-kind contributions. Also, many researchers resist using materials developed by other institutions (Tlili et al., 2020). However, collaborating with other universities can be cost-effective. An example of an academic network is [Open Education Consortium](#); non-academic networks are [Wikipedia](#) and [WikiEducator](#).

The **Donations model** involves donations from, e.g., foundations, society, industry, government, or non-governmental agencies. This form of funding strongly depends on the engagement of the external initiatives. Sustainability is consequently not granted if funding dries up (Okoli and Wang, 2015). Donations can also be perceived as limiting academic freedom (Tlili et al., 2020). Examples are [Khan Academy](#), [Wikipedia](#), [OpenStax](#), and [Apache Foundation](#), [OER Commons](#), [Hewlett Foundation](#).

In the **Institutional subscriptions model,** the provider makes educational materials accessible to institutions who subscribed as paying members (Okoli and Wang, 2015). Individuals who are part of these institutions can access the materials. This approach is similar to subscription deals between universities and publishers. Strictly speaking, this model is not in line with the notion of OER. One example is [HippoCampus](#).

The **Sponsorship/Advertising model** relies on generating revenue by exposing students to commercial messages (Okoli and Wang, 2015). While there might be opportunities in the geo-domain (e.g., ESRI), this model is perceived as unethical and not in line with OER. Also, universities might be worried that sponsors limit academic freedom (Tlili et al., 2020) and request 'sticky sites' to increase view time (Maron 2014). Furthermore, this model requires enough traffic (Maron, 2014). One example is [Academic Earth](#).

Similarly, the *Membership model* (also *Corporate Sponsorship* (Maron, 2014)) relies on organisations contributing to the university with money, services, and goods. In exchange, they gain privileges, for

example, early access to roadmap decisions and code releases. While generating money or other goods is easy and commercial messages are limited, the sponsor needs to fit into the university's profile. The sponsor's priorities might change, which might endanger long-term sustainability. One example is the Sakai project.

In the **Selling data model**, revenue is generated through data about the students' activities. Companies can use the data to improve user and learning experience or look for job candidates. Collecting user data is often problematic due to ethical and privacy concerns (Tlili et al., 2020).

In the **Consultancy, training, and support model**, an institution provides consulting for creating or using OER in their programmes (Maron, 2014; Geser et al., 2019). This model might entail providing courses to companies, for example, on Open Science and the FAIR principles, which are also relevant in the industry. The key benefits of this model are that generating revenue is easy if the know-how is already there and consulters obtain an overview of ongoing activities outside their university. On the downside, consulting requests are unpredictable and running a consulting agency takes time and effort (Maron, 2014).

The **Author pays model** is similar to journals' Article Processing Charges (Maron, 2014). The publisher generates revenue by providing publishing services (e.g., peer review, editing) for lecturers who want to make their materials publicly available. While this model emphasises the value of publishing OER, it also requires funding for authors to cover the costs. This model might also increase the divide between those countries, disciplines, and lecturers who obtain funding for this purpose and those who do not.

To sum up, the business models listed above can be subdivided into three categories (Orr, 2015; Okoli and Wang, 2015): First, community-based models rely on the engagement of community members. Possibilities to generate income are the coordination of the group and quality control. The main challenge is the mitigation of member fluctuation. Second, philanthropy-based models depend on donations and funding. Since funding time is limited, the projects might not be long-term sustainable. Furthermore, donors might require objectives, which limit academic freedom. Third, revenue-based models publish all materials as OER and generate income through value-added services. A challenge is to earn sufficient money to cover all costs.

Disregarding the individual benefits and limitations, there is no one-size-fits-all solution and relying on funding alone might be risky (Geser et al., 2019). These risks can be mitigated by combining several models (Tlili et al., 2020) as it is done by MIT.

Producing and Sharing OER

The following high-level models describe ways to produce and share OER.

Models for producing OER

In the **Institutional production model**, academic experts convert existing teaching materials into a sharable format (Wiley et al., 2014). In this model, three variations are possible (Lane, 2006):

- The materials are similar to the original materials and as complete as possible ("integrity model");
- The materials are limited to the essential aspects ("essence model");
- The materials are only used as a starting point ("remix model").

A key benefit is that experts create these materials. However, others argue that this model is expensive (Wiley et al., 2014). Example: MIT OpenCourseWare.

In the **Commons-based peer production model**, volunteers collaboratively create and continuously improve OER in a non-proprietary, non-commercial, open-licensed way (Benkler, 2007). Two famous examples are Wikipedia and OpenStreetMap. There is disagreement in the literature whether OER should be created in a decentralised way (Benkler, 2006) or with a small group of core people (Okoli and Wang, 2015). In contrast to the institutional production model, the community might not necessarily be skilled to create high-quality OER (Wiley et al., 2014). Furthermore, the diversity of contributors is often limited (Okoli and Wang, 2015).

In the **Content creation by classroom students model** (Okoli and Wang, 2015), the students of each class develop materials for the next year under the supervision of lecturers ("learning by teaching"). While this approach might be practical, the scope of the materials might be limited to the particular class making widespread use not always possible.

The **Cooperative production consortium model** is based on the collaboration of several institutions that use and create OER. This approach results in free and peer-reviewed online teaching materials (Okoli and Wang, 2015). The partnership may involve a commitment to contribute with a certain amount of effort. The key benefit is that by providing minor contributions, everyone can use the entire set of materials. On the downside, the materials can become too general or too narrow. The partners need to be far enough to avoid duplication and close enough to enable completion, making it hard to create one-size-fits-all materials. Examples are [Open Education Consortium](), [MERLOT](), and [Canada's Open Education Initiatives]().

Besides these models, there are also several concrete step-by-step guidelines available. SURF's [Introduction to OER]() helps lecturers share and reuse OER. In several manuals, researchers can get information on policies, communities, and quality assurance. The [OER Starter Kit]() includes an introduction to copyright, creating OER, and reusing OER.

Models for sharing OER

Wiley (2014) distinguishes three different ways to share OER:

- As individual OER components (see, e.g., [OER Commons]() and [MERLOT]())
- As open textbooks (see, e.g., [FlatWorld]() and [CK-12]())
- As open courseware (see, e.g., [MIT]() and [Open Education Consortium]()).

Janssen et al. (2012) differentiate between three scenarios:

- Release only a few minicourses as OER, including materials, exercises and didactics;
- Share a subset of a course as OER;
- Make all teaching materials available as OER, with or without exercises and didactics.

Garcia et al. (2020) describe ten simple rules for making training materials findable, accessible, interoperable, and reusable (FAIR). These rules comprise describing OER using rich metadata (including learning goals, prerequisites to attend the course), giving it a unique identity using persistent identifiers (e.g., a Digital Object Identifier (DOI)), and defining access rules using licenses. Furthermore, they suggest using interoperable file formats to make OER usable in different contexts. For this reason, the files should be editable, meaning that a Microsoft PowerPoint file, which can also be used with open source solutions (e.g., LibreOffice), or LaTeX should be preferred over PDF files. Although making these materials available in a FAIR and open way requires some effort from lecturers, the process should not be new to them. It is similar to providing access to the materials underlying their scientific articles.

Conclusion

The standard narrative around OER is about releasing all educational materials under an open license and free of charge. It is not surprising that decision-makers in universities are reluctant to implement this, at first glance, unsustainable way of carrying out education. Rabin et al. (2020) suggest changing the narrative around OER from *replacing* the traditional business model of a university to *augmenting* it. Their recommendation does not only address the concerns but is, in general, a meaningful way to realise OER. Replacing a business model can be risky and damage an organisation. Thus, it is crucial to discuss how OER can be realised considering the principles, limitations, challenges, and opportunities of OER.

As indicated at the beginning, this document serves as a discussion basis for a round table to discuss policies regarding OER, for example, to address copyright. According to Article 7 of the Copyright Law, employers hold the copyright for any work that has been created in employment, except academic publications, such as scientific articles and PhD theses. This exception does not include educational materials, which makes it impossible to adhere to the OER definition. For this reason, the next step is to develop and establish university-wide policies that make clear if and how lecturers can release OER. A second document "Open Educational Resources – UT vision, trends in the Netherlands and good practices" is in progress.

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