

Chapter 11

Public policy interventions to improve teaching and learning through open educational resources (OER)

This chapter identifies that the potential of OER can only be achieved through explicit policy support in the areas of production, use, reuse and adaptation of OER. This requires support in four areas: material support, information and training campaigns as well as changes to some regulations governing teaching and learning practices. The findings are based on background research before and discussions at the CERI/OECD Policy Seminar entitled “OER support through policy – exchange and discussion of good practices”, held in January 2015.

Main policy messages

Policy support for OER is essential. OER can help policy makers address key challenges faced by their education systems. However, policy support is necessary if OER are to develop their full potential for improving teaching and learning. Integrating OER into everyday practices in the educational field requires both supporting decentralised initiatives of engaged teachers and learners, and central changes to the framework conditions (regulations, quality assurance mechanisms, etc.) of teaching and learning. Reviewing international policies and practices of governments from across the world highlights specific policy options for ensuring the production and effective use, reuse and adaptation of OER. Policy support is recommended in the following four areas:

- Help establish repositories for OER and support the provision of open licence materials.
- Help establish communities of practices within the teaching body to encourage production and use of OER, and support the establishment of new teaching practices.
- Change the framework conditions of formal educational settings, by modifying rules, promoting new tools and reassigning the division of labour (e.g. for production and quality assurance).
- Promote the provision of more research on how OER are produced and used in certain contexts and by certain actors in the education system (teachers, learners and prosumers).

Policy framework

Three key potentials of OER have been highlighted in this report (see Chapter 1):

- Digital technologies have become ubiquitous in daily life and OER can harness the new possibility afforded by digital technology to address common educational challenges.
- OER are a catalyst for social innovation, which can facilitate changed forms of interaction between teachers, learners and knowledge.
- OER have an extended lifecycle beyond their original design and purpose. The process of distribution, adaptation and iteration can improve access to high-quality, context-appropriate educational materials for all.

To achieve these three key potentials, specific policy approaches and policy support are required (see Chapter 2):

Policy approach:

- OER can only reach their potential in the mainstream if they are clearly framed within the policy challenges for today's education systems. An appropriate policy framework starts out from key educational challenges and uses OER to help solve them.
- Both initiators of OER activities and their sponsors, which may be government or philanthropy, should build sustainability into their strategic models for OER.

Policy support in specific areas:

- Flexible access to high-quality educational materials is positive for learners, but they will require new support services to fully profit from the use of OER. This leads to a new role for teachers in the learning situation.
- Teachers and instructors require support as they develop new skills and overcome motivational and organisational barriers to sharing or collaborating through OER.

- OER provide flexibility and adaptability, which enable educational resources to change over time and in different contexts. However, this flexibility presents a challenge for many existing quality assurance procedures, which assume a hierarchical structure of quality control and relatively static educational materials. New systems of quality assurance are necessary.
- There are gaps in research on use and adaptation of OER. More research is necessary.

The results of the CERI/OECD government survey carried out as part of the report (see Chapter 11) indicate a prevalence of policy support for OER among the countries across the world: out of 33 countries, 25 reported having a government policy to support OER production and use – see Table 11.1. It is also notable that those countries with no national policies still have OER-related activities in their countries.

Table 11.1. **Countries reporting to have government policies to support OER production and use**

Government policy?	Countries
Yes	Austria, Belgium (Flemish community), Brazil, Canada*, China, Czech Republic, Denmark, Estonia, Germany*, Finland, France, Indonesia, Israel, Iceland, Italy, Korea, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Turkey, United Kingdom, United States
No	Australia, Japan, Luxembourg, Latvia, New Zealand, Slovakia, Sweden, Switzerland

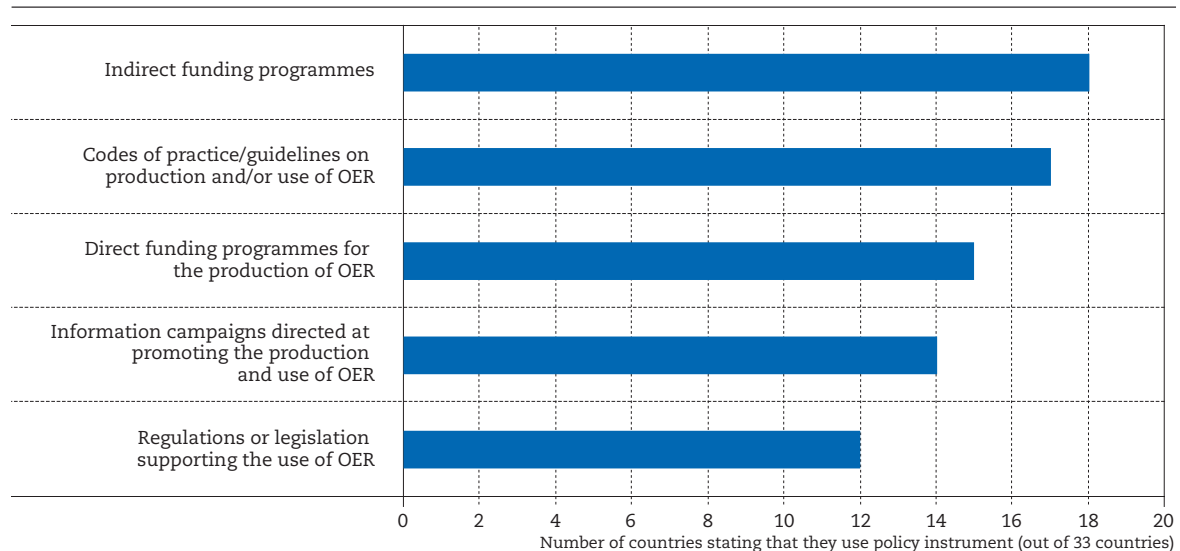
* In the cases of Germany and Canada there are only initiatives on Länder/province level at this time.

Source: CERI/OECD government survey, Annex A11.

What policy can do

According to Bemelmans-Videc, Rist and Vedung, there are three general types of public policy instrument that governments can select from to enact their policies. These are: regulations, economic means and information (Bemelmans-Videc, Rist and Vedung, 1998: 33). Findings from the CERI/OECD government survey show that indirect funding programmes are the most frequently used instrument to support OER production and use, followed by codes of practice/guidelines and direct funding programmes – see Figure 11.1.

Figure 11.1. **Types of policy interventions to support OER production and use**

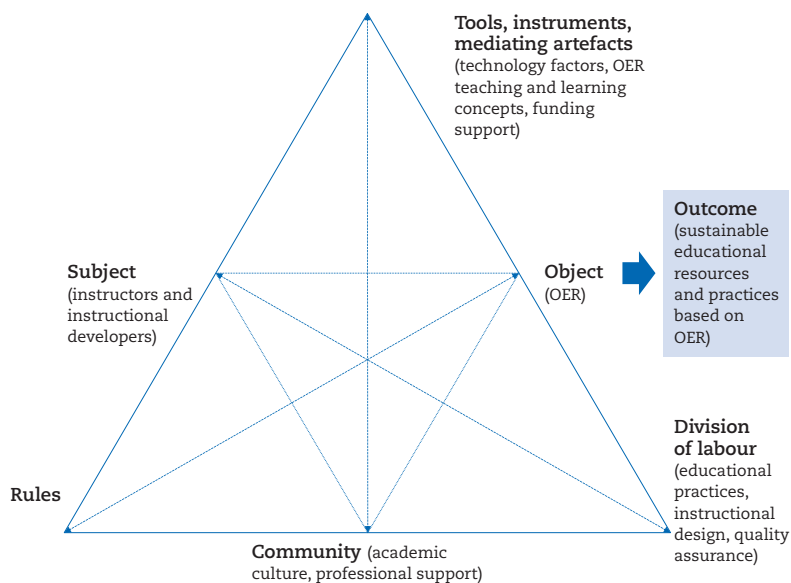


Source: Authors based on analysis of CERI/OECD government survey, Annex A11.

Eleven out of twenty-five countries reported often combining the promotion of indirect funding programmes with the dissemination of codes of practices and information campaigns.

Engeström’s activity theory can help to understand how governments can apply pressure to encourage the use of OER through direct or indirect policy instruments (Blin and Munro, 2008; Engeström, 2011; McGill et al., 2013; Russell and Schneiderheinze, 2005; van der Westhuizen and Basson, 2011). The activity theory approach assumes that an activity system is made up of the interaction between a subject and an object in order to produce an outcome. This interaction is mediated by a community, and constrained or facilitated by rules, tools and the division of labour – see Figure 11.2. This approach recognises that the introduction or promotion of OER changes the educational setting – something that the “technology-first” approach has traditionally neglected as key to successful reforms in education (Selwyn, 2010).

Figure 11.2. Activity theory approach for OER practices



Source: Adapted from Porter (2013), *Exploring the Practices of Educators Using Open Educational Resources (OER) in the British Columbia Higher Education System*: 141.

An example of the activity theory in relation to OER would be that of educators (subjects) who are used to producing and using commercial textbooks (objects) to support the attainment of learning objectives (outcomes). For this, they use specific tools within a context of rules (e.g. only accredited books), a collective community (e.g. other teachers) and with a certain division of labour (e.g. production of the textbook by a publisher with the support of selected authors).

Changing the object to an OER (e.g. to an open textbook or even alternative educational resources) can lead to disruptions due to the contradictions it causes in the old activity system. For instance, the OER (object) can be more quickly updated (due to new tools), but there is no set system of quality assurance (division of labour and the regulations concerning use may be unclear). Teachers uncomfortable with this new activity system will be reluctant to use the OER or will tend to use the OER as if it were still a proprietary textbook. Policy interventions can help to change this configuration or help teachers and instructors to deal with the challenges of a new system.

The four areas for policy support highlighted at the start of this chapter can be translated into specific policy actions, each related to different points in the activity system:

- **Help establish repositories for OER and support the provision of open licence materials.** This ensures that OER are available and discoverable as new ‘tools’ to support improvements in teaching and learning.

- **Help establish communities of practices within the teaching body** to encourage production and use of OER and support the establishment of new teaching practices. This ensures that the available OER are being used and helps teachers and instructors to adapt to their new role in the learning situation.
- **Change the framework conditions of formal educational settings** by modifying rules, promoting new tools and reassigning the division of labour (e.g. for production and quality assurance). This ensures that the necessary adaptations to the activity system are made in order to fully benefit from the new opportunities and challenges presented by OER.
- **Promote the provision of more research on how OER are produced and used** in certain contexts and by certain actors in the education system (teachers, learners and prosumers). The previous policy actions should be informed by research to evaluate the impact of changes and develop new interventions.

Learning from practice

The remainder of this chapter explores government activity in the four areas of OER policy support.

Help establish repositories and support the provision of open licence materials

Policy can support OER use through mandating or encouraging its production. If there is currently no OER, or not enough, governments may change the funding of educational resources or change the regulations for their production and use. One way of centralising and focusing efforts on the use and sharing of OER is to provide a central repository for openly licensed educational materials or to support efforts to make existing OER more discoverable. In this way, policy interventions change the “mediating artefacts” in the activity system and change rules of OER production and use.

Policy options:

1. **Facilitate the establishment of a central repository for OER or a platform that collects links to OER and stores them in various repositories (i.e. a meta-repository or referatory).** This soft approach to the issue starts from the view that OER already exist and that the most important thing is to establish one location where they can be stored in order for them to be better discovered by others.
2. **Provide direct funding for new educational materials that have the characteristics of OER.** This is the most direct way to ensure OER production.
3. **Review existing educational materials and change their licence in order to make them OER.** This practice may lead to tensions or necessitate new agreements with commercial publishers (see Chapter 10).
4. **Regulate that all publically funded materials should be OER by default.** Alternatively, the regulation could state that new educational resources should be based on existing OER, where possible (“reuse first” principle).

Policy in practice:

The most common practice among governments appears to be setting up a repository for OER. Examples of such repositories can be found in many countries, including Wikiwijs¹ in the Netherlands, Jorum² in the United Kingdom, the National Digital Learning Arena (NDLA)³ in Norway and the Eduthek⁴ in Austria. Wikiwijs and Jorum contain almost exclusively OER content, whereas NDLA and Eduthek contain a mixture of both OER and proprietary materials. This is also a policy decision.

The focus exclusively on OER is about showcasing OER. The goal of Wikiwijs was to mainstream OER by making it available directly in the repository and by referring to other sources. Although proprietary materials could also be included from the beginning, the default setting for search activity is freely available, open licensed materials and all communication focuses on OER. In the United Kingdom, most of the content stems from earlier projects funded through a government programme run by Joint Information Systems Committee (JISC) and the Higher Education Funding Council for England (2009-2012).

Alternatively, the idea behind mixed content (OER and non-OER) is to encourage more dynamism and competition in the production of good quality educational materials, as in the cases of NDLA and Eduthek. The OER work here is an addition to cover areas not covered in the marketplace and is a catalyst for proprietary suppliers to improve their offering. However, it can also be used as the basis for new educational materials (analogue to open source programming), which may then be sold on the open market. Recycling on the market is allowed in Norway, where NDLA is based, but in Austria, where Eduthek is based, OER may not be used in commercial settings (i.e. CC NC).

In many cases, the production of OER is supported directly by policy in order to ensure sufficient stock. For instance, in Spain, the federal government published a public tender of EUR 4 million in 2014 for the creation of OER. The allocation of funding is 60% for the creation of OER for preschool and special needs education, and 40% for secondary education OER materials.⁵ In 2014, British Columbia, Canada, also announced a similar call for tender, with the goal of producing open textbooks.⁶ In Austria, the government recognises that although a great deal of e-content is freely available, it is not also open and extendable in the sense of OER. For that reason, the government has set up an e-learning school cluster project with the aim of developing short digital learning units that can be made available as OER to the members of the cluster project, and then distributed more broadly through the Eduthek platform.

In Norway, the government decided in 2007 that students in upper secondary education should be provided with free educational materials (OECD, 2009: 101).⁷ The Norwegian Ministry of Education and Research allocated EUR 5.5 million to projects related to the development of digital learning resources in upper secondary education.⁸ This funding was also meant to lay the ground for the introduction of free learning resources, which have now been released on the National Digital Learning Arena (NDLA) platform under liberal Creative Commons licences.⁹ Currently, the NDLA uses approximately two-thirds of its funding to procure digital materials on the open market and invests one-third in paying participating teachers' salaries for the development and quality assurance of OER.

Instead of completely developing new educational materials, public policy may take the view that it is more efficient to convert existing educational materials into OER. In 2013, the department for educational technology within the Ministry of Education in Israel issued a tender to have all textbooks with copyright owned by the Ministry transformed into digital format and released under an OER license. This type of activity leads to a change in the division of labour common in the production of educational materials, whereby the publishers usually remain responsible for the quality of the materials and for updating them based on any changes to the curriculum. In the case that the state acquires educational materials as OER, it will have to consider whether it also needs to ensure that the materials remain up to date (see framework conditions below).

The practice of publically supporting the production of new OER and converting existing resources to OER has led to conflicts with commercial publishers. In Norway, publishers complained that the public support of OER has unfairly reduced the size of their market.¹⁰ Similar debates have been had in Poland in the context of its digital school initiative, which aims among other things to replace copyrighted textbooks with OER (Sliwowski and Grodecka, 2013: 31), and in Germany, although here the practice of publically supporting OER has not yet been realised (Dobusch, Heimstädt and Hill, 2014). However, as public money must be spent efficiently and the development of educational materials can be seen as a core part of educational practice itself, such complaints often do little to discourage governments

promoting the use of OER. In the case of Norway, the NDLA actively encourages proprietary content providers to base their content on already existing materials in the NDLA (reuse first).

The procurement of OER may be part of a greater initiative, rather than an exclusive activity. For example, the Trade Adjustment Assistance Community College and Career Training Program (TAACCCT) grant programme in the United States (Department of Labor)¹¹ aims to promote innovative partnerships between community colleges and employers. Since 2010, all three rounds of the TAACCCT programme have required TAACCCT grantees to make all grant-funded curricula and training materials OER by licensing them with a Creative Commons license. As stated in the legislation: “Work that must be licensed under the CC-BY includes both new content created with the grant funds and modifications made to pre-existing, grantee-owned content using grant funds. This license allows subsequent users to copy, distribute, transmit, and adapt the copyrighted work (...).” Similarly, the Ford Foundation, William and Flora Hewlett Foundation and the Bill and Melinda Gates Foundation (among others) now require grant holders to release their works with a Creative Commons licence to allow reuse and adaptation.

Help establish new communities of practices within the teaching body to encourage production and use of OER

Making OER available does not ensure that they are used. Furthermore, OER offer new ways of using learning materials to support learning (see Chapters 3 and 4), which can be a challenge for teachers and instructors. Policy support can help remove obstacles and encourage the use of OER by teachers and instructors. As a review of the Wikiwijs platform in the Netherlands concluded, if policy does not support increased use, OER-related activities are too dependent on the individual motivation of teachers (Schuwer, Kreijns and Vermeulen, 2014). Efforts to establish and support a community of practice around OER are central in this context (see Chapter 9).

Policy options:

1. **Increase importance of OER in teacher training programmes.** This should encompass both initial teacher training and offering specific modules on producing and working with OER as part of ongoing professional teacher training provisions. Courses may be stand-alone or have a general focus on, for instance, student-centred learning, but also include the use of OER as a distinct part.
2. **Provide intensive training to a small number of teachers and instructors on how to get the best out of OER.** Following this training, set up a system that enables this knowledge to cascade into other teachers’ and instructors’ practice. The “trainers” in this case could be given an award or special status in order to encourage them to take part.
3. **Set up a national competency centre.** This centre could offer a central resource of advice and training for teachers/instructors.
4. **Launch an information campaign and/or release guidelines** that encourage teachers and instructors to use OER in their teaching provision and, if necessary, change the regulations in order to allow this to happen.

Policy in practice:

A central question when considering how to support teachers in their use of OER is whether the support should be focused solely on OER or on a more general issue that includes OER as part of didactical tools used by teachers. Policy experiences suggest that if activities are too focused on OER they may not adequately engage teachers.

In the case of the Czech Republic, for instance, supporting the production and use of OER is a by-product of a more general strategy to improve teachers' professional development.¹² The Metodika II initiative (2008-2013) aimed to train teachers to use several forms of didactical methods, to share experiences and to become lifelong learners. The initiative particularly focused on providing systematic support for teachers using digital learning resources (many of which were OER). It also created a central electronic platform for sharing teaching materials and professional experiences.¹³

Similarly, in the case of Poland's digital school initiative (Sliwowski and Grodecka, 2013),¹⁴ a lot of the work centred on improving the mathematics scores of Polish school pupils. Project Maths in Ireland had the same objective. This required new learning materials, which the initiators determined could be best supplied through OER, but still required teacher engagement. As one of the initiators of the Polish case states: "The main teaching aid is a teacher's brain".¹⁵

One method of ensuring change in teaching practices used in Poland and Ireland is to change the examinations (i.e. the envisaged outcomes of their activities). Making examinations more focused on reasoning instead of recall, and on competences instead of discrete knowledge had a positive "wash-back" effect on the motivation of teachers to change their practices.

In Austria and Germany, the new focus on learning competencies instead of discrete knowledge at school is seen as a justification and an enabler for more focus on OER. However, the courses offered to teachers still need to be recognised by them as relevant to their daily work. The Project Maths seminars in Ireland have tried to address this by asking teachers to bring their own problems to the seminar so that they can be dealt with as part of the seminar programme. This helps to bridge the gap between the seminar and daily work.

In the United Kingdom and Washington State in the United States, attempts at cascading acquired knowledge and experience on OER to many people new to the topic plays an important role in bridging the gap between learning about and undertaking new teaching practices. In the case of the United Kingdom's OER programme (2009-2012), one major strand of the funding scheme was dedicated to projects focused on the activity of cascading (Gruszczynska, 2012). It argued that OER production and use could be improved by taking a reflexive pedagogical approach where teachers and instructors review their own activity system.¹⁶ In Washington State, the OER initiative of the Office of Superintendent of Public Instruction provides special grants to schools, which are then expected to operate as role models for other institutions.¹⁷

Wikiwijs in the Netherlands (Wikiwijs program plan 2011-2013, 2011)¹⁸ was conceived as a one-stop-shop for OER materials training and advice. Initially, teacher support was focused on assisting interested teachers, and online courses, developed by the National Institute for Curriculum Development, offered advice on how to develop and use OER. These courses could be used by teachers for self-study or in online groups. In a second stage, the initiators began offering offline courses in schools and colleges to try and reach other teacher groups.

Recognising the need to support education resource developers, who may have little previous knowledge of OER, the Open Professionals Education Network in the United States¹⁹ supports grantees of the TAACCCT programme to meet the programme requirements for developing OER and exchanging experiences. It is operated by Creative Commons and funded by the Bill and Melinda Gates Foundation.

A less direct way of supporting OER development and use (i.e. soft governance) is to launch an information campaign. The survey response from Australia highlighted that the introduction of codes of practice/guidelines and/or information campaigns for OER will be a key policy initiative in the near future. This approach presumes that giving teachers information and the opportunity (through changing regulations and division of labour) to use OER will lead to increased OER practice. This type of approach is often taken with the introduction of Internet platforms for OER, which are often subtitled "for teachers, from teachers". However, the arguments for including teaching

training and the provision of new expertise for teachers and instructors generally conclude that a soft touch is insufficient if OER use is to become a common practice among teachers.

In 2010, the New Zealand government recommended the use and production of open licence works in all areas of public life, including education (New Zealand Government, 2010). However, there has been criticism that this opportunity was not taken up by teachers and schools without additional support.²⁰ It is for this reason that information campaigns and changes to regulations are rarely used alone. As shown by the results of the government survey in Figure 11.1: countries often combine the promotion of funding programmes for the production and use of OER (direct and indirect) with the dissemination of codes of practices and information campaigns.

Change the framework conditions of formal educational settings

Framework conditions affect the activity of teachers and instructors, so changing these by modifying rules, promoting new tools and reassigning the division of labour, may serve to promote the production and use of OER. As well as making new activities possible, these interventions can also encourage and incentivise certain behaviours within the activity system, or modify the activity system as a reaction to new opportunities (e.g. by changing quality assurance or procurement measures).

An important issue concerns the level at which policy initiatives can and should be implemented. The difference between countries and educational sectors is related to the division of regulative and operational responsibilities in an education system. In this sense, public policy formation will be shaped by considerations on what should and can be done on national, state, city and/or institutional levels, and how this presents new opportunities or challenges in connection with higher or lower administrative levels of responsibility. In general, there are two broad styles of policy approach: top-down and bottom-up interventions (Cerna, 2013).

Policy options:

1. **Help bottom-up initiatives reach scale.** This approach has the advantage of being able to benefit from the self-directed motivation of the initiators and their networks (Cerna, 2013: 18-19). One policy consequence of this approach is that initiatives are frequently only supported by public policy and funding for a limited period of time. Therefore, bottom-up initiatives are often not taken to scale and integrated into the main public arena, but are expected to sustain themselves in the medium- to long-term (OECD, 2009: 72).
2. **Push OER practice from top-down.** This approach has the advantage of public policy being able to take into account all the success factors considered necessary for good practice, so it should afford a more systemic approach. It is also particularly appropriate in situations where the practice is considered by many in the field as contentious or of little value. However, this approach has a tendency to neglect the importance of local factors for success (Cerna, 2013: 18-19).
3. **Connect top-down and bottom-up policies.** In recognition of the various aspects of teachers' lives that govern their use of educational materials to improve teaching and learning, as highlighted by the activity theory, a combination of both top-down and bottom-up approaches may be more appropriate – although it is not easy to get it right. This approach has been called the “ecosystem approach” (Figgis et al., 2007).

Policy in practice:

With the assumption that OER is a grass roots innovation and in recognition of the many small OER initiatives across the world, it may seem most appropriate to take the bottom-up approach. In

this context, policy would focus on information and encouragement rather than negative sanctions. Individuals and groups of teachers or instructors can be supported through recognition or funding, or through the alleviation of conditions that restrict the opportunities for experimentation with new education materials. Promotion of this practice is often linked with the expectation that other as yet non-active persons will adopt OER practice once they see what their peers are doing. This was the driving idea behind the OER programme in the United Kingdom (2009-2012), which aimed to support many small projects instead of a few big ones.

A bottom-up approach is taken in New Zealand, which has three major initiatives to support OER. Creative Commons Aotearoa is currently undertaking a campaign to encourage school Boards of Trustees (the governing body for schools in New Zealand) to adopt Creative Commons licensing for works produced by teachers.²¹ Digital New Zealand, led by the National Library of New Zealand, collaborates with 160 partners to provide easy access and discoverability for digital content, some of which is Creative Commons-licensed.²² The Open Education Resources university (OERu)²³ initiative, led by Otago Polytechnic, aims to provide free learning opportunities using courses based entirely on OER, with pathways to formal academic credit recognition.

An absence of specific OER policy does not mean that there is no OER practice. In Japan, which to date has had no national level discussion or initiative to promote OER, some initiatives or projects related to OER have been implemented by universities or institutions such as the Japanese Open Courseware Consortium. A broader practice, which has developed with a minimum of direct government intervention, can be found in Finland. *Avoimet oppimateriaalit ry* (the Finnish Association for Open Educational Resources) was founded in September 2012 by teachers and financially supported through European Social Funds.²⁴ Its main purpose is to increase the recognition and adoption of OER in Finland. In 2013 it organised a weekend-long event (called a hackathon) to create a mathematics book for upper secondary education (*Vapaa matikka*), to be used under Creative Commons license. In October 2014, the association created an e-magazine for sharing peer-assessed OER.

Singularly top-down approaches to supporting OER development are infrequent and depend on the distribution of responsibilities for educational materials and the centralisation of educational practice. This is becoming rare in the school sector and is even rarer in higher education or continuing professional training. In this context, what constitutes the top needs to be defined.

In a federal system, the highest level for many policy activities is the state level, even though the federal level can also have some influence. In Canada, Germany and the United States, the difference between state and federal becomes evident. For instance, Washington State in the United States has a statewide strategy on promoting the use of open textbooks, OER, and the use of standard quality criteria.²⁵ It has teamed up with 11 other federal states with similar programmes to promote and plan the development of OER for primary and secondary schooling in the areas of mathematics and English.²⁶ This interstate initiative purposely does not involve the federal level due to concerns that it may make the initiative too political and detract from the educational goals themselves. In Germany, the federal and state (*Länder*) levels are currently working jointly on a position paper on the place of OER in the German education system. At the same time, a number of states – for instance Berlin and Brandenburg – are already actively supporting the use of OER, for example, through changing the way that educational materials are accredited for use in school lessons.

In the case of Australia, the introduction of codes of practice/guidelines and/or information campaigns for OER are planned as key policy initiatives. The National Copyright Unit is developing a policy proposal that recommends the adoption and implementation of a government OER policy. At present, policy makers are undecided on whether such an OER initiative should initially be pursued on a national basis through the Department of Education, or by a state or territory willing to take the lead.

Top-down strategies can support the use of OER by defining a new way of teaching or a new way of examining, which in turn entails or encourages the use of new educational materials. An example of this is the Common Core curriculum for mathematics and English, which has been widely adopted in the United States' federal states. In the case of Washington State, the school districts are responsible for deciding which educational materials they use. However, the state education agency has been given responsibility for "identifying and developing a library of openly licensed courseware aligned with the common core state standards (...)" and encouraging school districts to adopt these materials.²⁷

Encouraging teachers and instructors to use and adapt OER is central (see Chapters 4 and 9). In the case of the Netherlands, the Wikiwijs platform was considered the foundation around which practice would be built. However, an evaluation of the platform emphasised the importance of policy to support implementation. The evaluation states: "for both school management and teachers, adopting OER is not a natural thing to do" (Schuwer et al., 2014). This leads to the conclusion that interventions beyond bottom-up support and encouragement are necessary.

Policy intervention is about creating an appropriate ecosystem. Even if the current framework conditions do not prohibit the use of OER, they may create tensions that limit the use of OER in practice. One of the problems associated with OER is that the innovative potential is centred on both process and content, and that these two aspects contain a certain contradiction between them, whilst equally overlapping. To illustrate: OER facilitates direct collaboration between teachers in different settings through the development and adaptation of educational materials. Studies suggest that such collaboration will increase the professionalism and improve subject and pedagogical knowledge of teachers in the process (see Chapter 4). This process is made possible by the resulting educational materials being continually adaptable by modification and iteration.

At the same time, there is an expectation that collaboration will lead to an improved quality of the educational materials themselves. If the focus of educational materials and how they are evaluated remains on content (see Chapter 6), this must be evaluated as a discrete process in a formalised structure. This calls for a hierarchical process that defines set criteria and set persons who evaluate the fulfilment of these criteria at a certain point in time. It also requires the educational resource to be fixed and no longer adapted – otherwise it would have to be re-evaluated against the set criteria. Having such procedures makes it easier for the state to recognise the use of OER-based content in school lessons, for instance, and may make it easier for certain teachers and instructors to use the OER as they have confidence in the content. However, with this system the process of continual adaptation by modification and iteration is stopped.

Changing the ecosystem in which the OER are used is, therefore, the only way to alleviate this inherent contradiction, which may otherwise constrain the use of OER by individuals and the unfolding of strong communities of practice. One of the objectives of the Washington State initiative is to move OER from being the "scary choice to the safe choice".²⁸ However, this is not easy. Washington State reviews and evaluates OER materials. This is possible as the OER in this case tend to be for whole course programmes (i.e. have a low-level of granularity). In the case of NDLA in Norway, where the content is of a much smaller granularity in general, review and evaluation have largely been achieved through a two-layered approach to OER production and quality assurance. OER is produced by private companies and "editorial staff", who are teachers receiving a small remuneration for their work. In addition, any user can upload new or remixed materials and the only quality control is other users' comments. In this way, the NDLA mixes a closed-centralised component with an open decentralised component in its quality assurance approach (see Chapter 6). This is the type of balance that policy support must attempt to achieve through packaging reform interventions into one cohesive whole (Bemelmans-Videc, Rist and Vedung, 1998).

Promote the provision of more research on how OER are produced and used

Research informs policy development in two ways: it can be used for campaigns to persuade key actors in the education system to get involved in OER production and use, and it can be used to support policy decisions by providing insights into, and a better understanding of, the activity system around OER.

Policy options:

1. **Require that the impacts of all publically funded OER projects are evaluated.** Sponsor this type of research for initiatives not funded through public grants. Research could be action research by the implementers of the project and/or external evaluative research carried out by third parties.
2. **Foster OER research.** Foster broader research on the practices made possible through OER and their contribution to improving teaching and learning.

Policy in practice:

Although much of the existing research has focused on investigating individual OER projects or initiatives, broader research on OER is also required. Over the past few years, the Open University's OER Research Hub²⁹ has established itself as a facilitator and supporter of research initiatives across the world. In their recent report, the OER Research Hub concluded that not enough research on OER is being carried out, and that it is often based on small-scale initiatives of persons involved in OER project themselves (de los Arcos et al., 2014).

However, broader research efforts do exist. In the United States a large-scale study of the use of Khan Academy resources in schools across the country was carried out by the Stanford Research Institute (SRI) in 2014 (Murphy et al., 2014) with funding from the Bill and Melinda Gates Foundation. In the academic year 2015/16, a large-scale evaluation of the effectiveness of Khan Academy's resources in improving community college students' algebra achievement will be carried out by WestEd, which is funded by the US Department of Education.³⁰ Such studies are important, although they tend to have a narrow focus of OER as a substitute for existing educational materials.³¹

Research is useful for advocacy of OER. However, many studies currently focus on contrasting OER with more traditional educational resources, such as textbooks. There remains little research on how OER are used, adapted and reused in various educational settings to create new types of learning opportunities (see Chapter 9). In the United Kingdom's OER programme (2009-2012) each funded project was required to undertake an impact study. On the basis of these studies, a meta-study was carried out on the impact of all OER-related projects during the funding period (McGill et al., 2013). This led to an analysis of communities of practice around OER and how to support them (Littlejohn et al., 2014). This programme was not continued and its legacy was left to the communities of practice, which were cited in the research as being too frail (in many cases) to be sustainable.

Packaging policy interventions for educational improvement through OER

The participants of the CERIOECD policy seminar emphasised that OER can only be one element in a country's educational strategy, and that it is most likely to play a key role when it can be attached to a larger framework of educational reform – this is referred to as “packaging” (Bemelmans-Vidéc, Rist and Vedung, 1998). In the countries represented at the seminar, policies to support OER were embedded in larger educational reforms, frequently implementing more student-focused learning in the areas of science, technology, engineering and mathematics (STEM).

The drive for governments, therefore, is not necessarily to support OER on its own, but to support good quality teaching and learning through the use of OER. In other words, the focus of governments is

more on what educational systems need and the role OER can play in achieving this – and less on what policy support OER might need. This change of perspective is an important step towards mainstreaming OER. Explicit policy support (as framed by the activity system) that integrates OER into the common discourse and everyday practices of teachers and learners in the education field makes it more likely that a high proportion of teachers and learners will fully use OER to their greatest potential.

Notes

1. www.wikiwijsleermiddelenplein.nl/.
2. www.jorum.ac.uk/.
3. www.NDLA.no.
4. www.schule.at.
5. www.boe.es/boe/dias/2014/07/10/pdfs/BOE-A-2014-7305.pdf.
6. www.newsroom.gov.bc.ca/2014/05/free-online-textbooks-developed-for-skills-training.html.
7. www.regjeringen.no/nb/aktuelt/free-and-open-learning-and-research-in-n/id475303/.
8. www.regjeringen.no/nb/dokumenter/digitale-laremidler-i-videregaende-oppla/id91754/.
9. www.NDLA.no.
10. Discussed at annual meeting of the Federation of European Publishers, Krakow, 19 September 2014. The meeting was attended by Michele Rimini, OECD.
11. www.doleta.gov/taaccct/.
12. www.msmt.cz/file/3081_1_1/.
13. The repository for OER can be found at: <http://rvp.cz>.
14. <http://cyfrowaszkola.men.gov.pl/>.
15. Source: presentation from Zbigniew Marciniak (Polish Ministry of Science and Higher Education) at the CERI/OECD Policy Seminar.
16. <http://cascadeoer2.pbworks.com/w/page/31686928/Cascade%20tools%3A%20Existing%20resources%20to%20support%20OER%20release>.
17. <http://digitalllearning.k12.wa.us/oer/grants.php>.
18. www.wikiwijsleermiddelenplein.nl/.
19. <https://open4us.org/>.
20. <http://creativecommons.org.nz/2014/06/taupaki-school/>.
21. <http://creativecommons.org.nz/2014/06/taupaki-school/>.
22. www.digitalnz.org/about.
23. <http://oeru.org/>.
24. <http://avoimetoppimateriaalit.fi/in-english/>.
25. <http://digitalllearning.k12.wa.us/oer/>.
26. <http://k12oercollaborative.org/>.
27. <http://apps.leg.wa.gov/rcw/default.aspx?cite=28A.300.803>.

28. Source: presentation from Karl Nelson (Director of Digital Learning, Washington Office of Superintendent of Public Instruction) at the CERI/OECD Policy Seminar.
29. <http://oerresearchhub.org/>.
30. www.wested.org/study-khan-academy-on-community-college-students-algebra-achievement/.
31. See also the Review Project led by John Hilton III, which provides “a summary of all known empirical research on impacts of OER adoption”. The coordinator states: “In each of the studies reported (...), OER were used in manner very similar to the traditional textbooks they replaced. We look forward to reviewing empirical articles describing the learning impacts of open pedagogies.” See: openedgroup.org/review (status on: 19.03.2015).

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Annex A11. Government survey on OER policy support

Survey focus and execution

In August and September 2014, governments were asked to respond to a CERI/OECD questionnaire on how they support and facilitate the development and use of OER in all education sectors.

The survey was loosely based on a previous OECD survey (Hylén et al., 2012), but was more tightly focused on the issues most relevant to the current phase of OER development. It focused on three issues: 1) whether OER-related policies are being enacted by governments; 2) what arguments are commonly used to support these policy measures; and 3) what instruments or combinations of instruments are being used. In this, it took the definition of public policy from the work of Bemelmans-Videc, Rist and Vedung, who define public policy instruments as “concrete and specified operational forms of intervention by public authorities” in order to effect social change (Bemelmans-Videc, Rist and Vedung, 1998: 4).

Questions from the survey

The full survey, including design, may be obtained from the OECD on request. Below are the questions used in the survey:

- B1. Is OER production and/or use supported through policy-level interventions at governmental level in your country? [Yes/No]
- B2. Which educational sectors are covered by these OER-related policy-level interventions? [ISCED levels; multiple responses possible]
- B3. What policy interventions are used to support and facilitate OER and their use? [Instruments named; multiple responses possible]
- B4. Looking at the policy interventions undertaken in your country to support and facilitate OER production and use, please rate the national relevance of the objectives listed below by ticking the appropriate box. [Six educational challenges used in this report; respondents choose whether major, minor or not an argument]
- B5. In addition to policy-level interventions at governmental level or despite the lack thereof, what other types of OER initiatives are ongoing in your country? [Initiative types named; multiple responses possible]
- B6. More generally, is information and communication technology (ICT) in education being supported through policy-level interventions at governmental level in your country (irrespective of support or not of OER)? [Yes/No]
- B7. Which educational levels are covered by these ICT-related policy-level interventions? [ISCED levels named; multiple responses possible]

- B8. If the answer to Question B1 is 'No', are there any indications that your country will develop a dedicated policy intervention on Open Educational Resources in the near future (1-2 years)? [Instruments named; multiple responses possible]
- B9. If the answer to Question B1 is 'No', please elaborate on the reasons for lacking OER policy interventions and/or the barriers to be overcome. [Open response question]
- C1. Please provide more detailed information below on the interventions mentioned in your response to Question B3 (ideally you should briefly describe at least three of the main interventions). [Outline for responses provided]

Use of results

The survey collected the responses of 33 countries: 29 OECD member countries and 4 accession and key partner countries (Brazil, China, Indonesia and Latvia). The results indicate a clear policy support for OER, with 25 countries reporting having a government policy to support OER production and use.

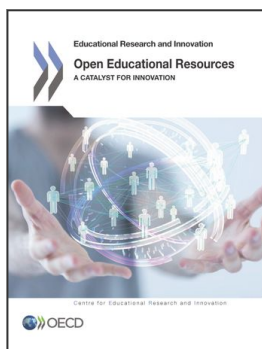
The survey results provided a mapping of the current efforts of governments around the globe to support and facilitate the development and use of OER in all educational sectors, i.e. schooling, vocational training, tertiary education and lifelong learning (used in Chapters 1 and 11).

They also provided a rich basis for dialogue and exchange between policy makers in different countries on how best to support OER, which was used for the OER Policy Seminar held in January 2015 at the Paris headquarters of the OECD (see Chapter 11).

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