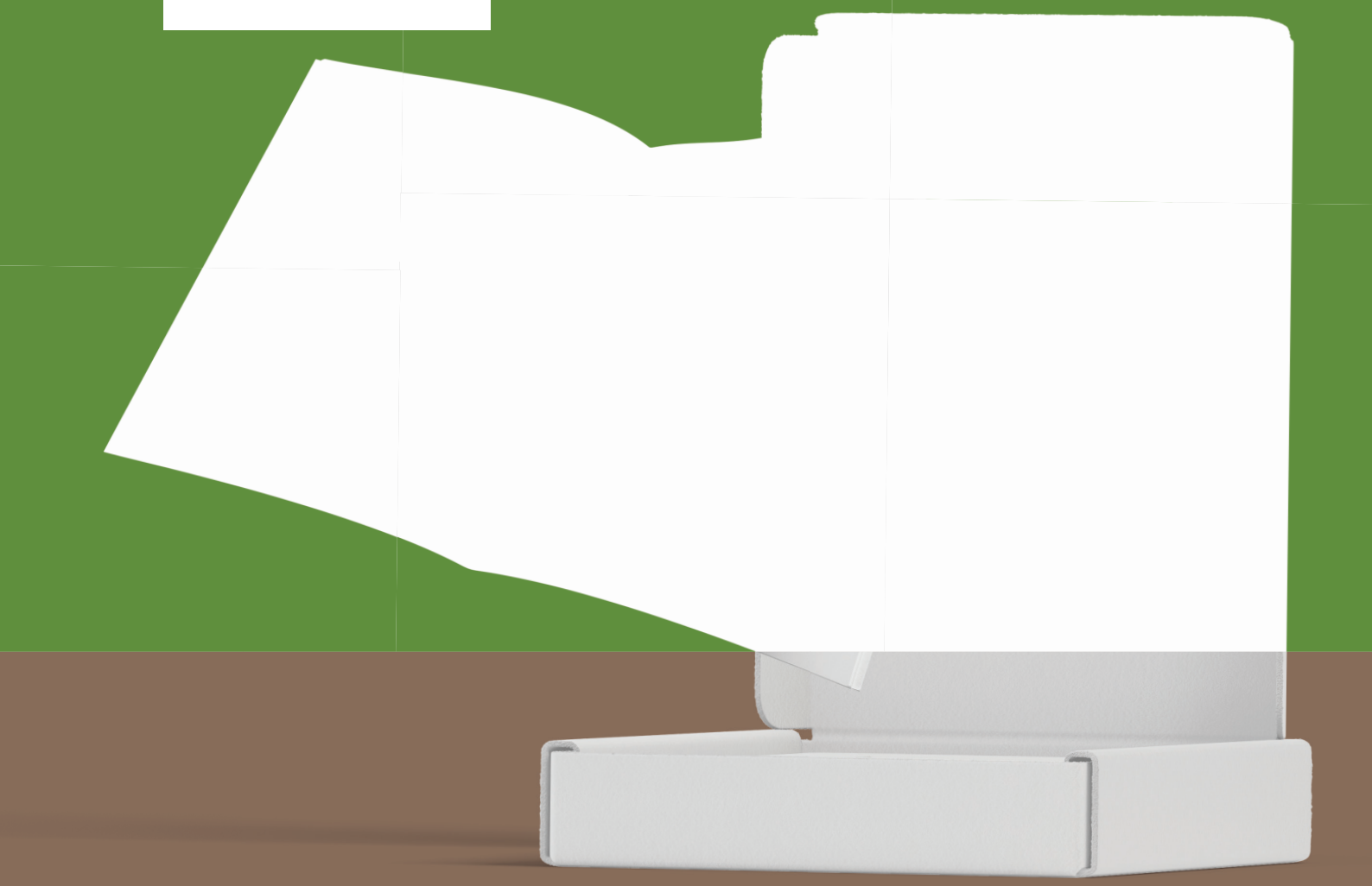
iV4j



OPEN EDUCATIONAL RESOURCES (OER)

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Intellectual Output 6
Guidebook on Open Educational Resources (OER)

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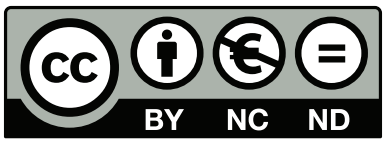


Contents

Foreword

This guidebook sheds light on the practical use and implementation on institutional level as well as research review on Open Educational Resources (OER). It has practical examples and a list of essential repositories and other tools and platforms suitable for OER.

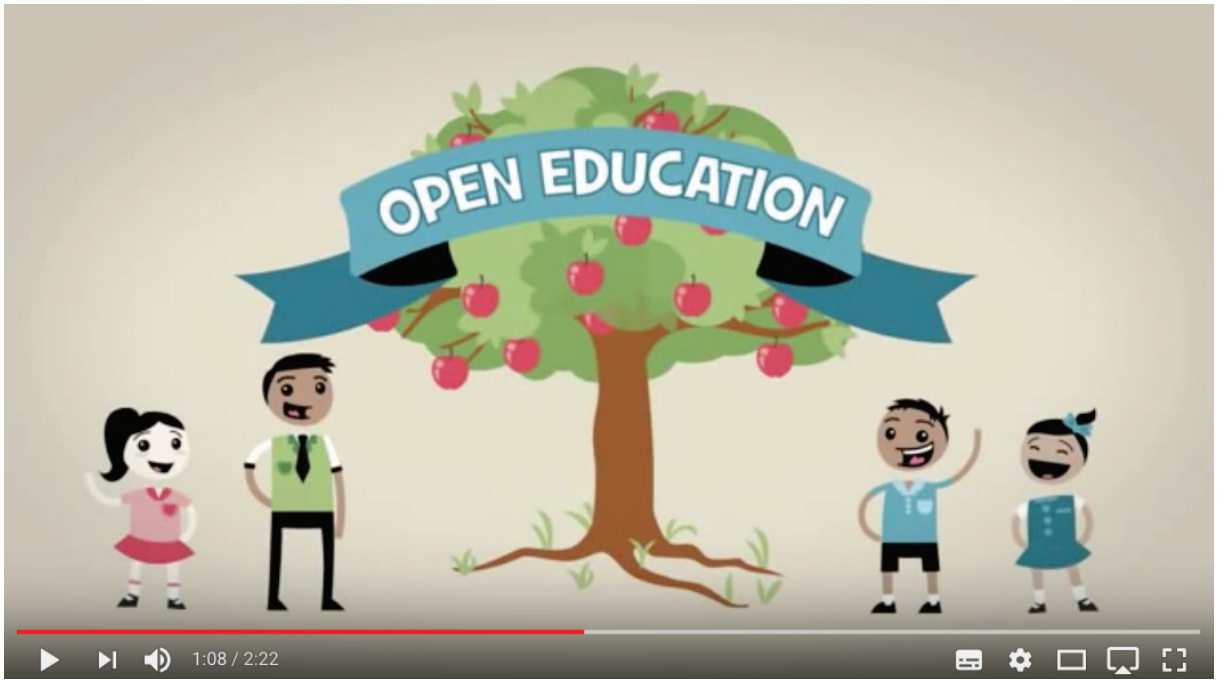
The guidebook is intended for TVET/VET educators and management and produced by IV4J project funded by EU Erasmus+.

23rd August, 2018

Esko Lius

Key Expert, Digital Learning (Omnia, Finland)

Chapter 1. Introduction to OER



OER (Open Educational Resources) Introduction by shelleynvcc on Youtube.

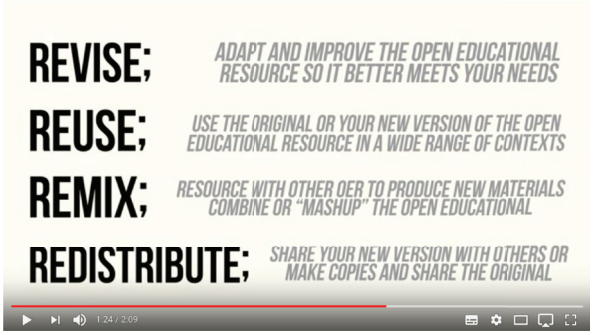
Open Educational Resources (OER), a part of the global open content movement, are shared learning, teaching and research resources available under legally recognized open licenses—free for people to reuse, revise, remix and redistribute. They may be text, media, courses and other digital assets.

OER has great potential for supporting equitable, inclusive, open and participatory education. As it provides educational resources free for use, it provides accessible and affordable educational options. The underlying principle behind OER is to provide opportunities to all, and to strengthen the democratization of knowledge by making learning and teaching material available at a larger scale.

High-quality OER can save teachers significant time and effort on resource development and advance student learning inside and outside the classroom. Further, open sharing of resources has the potential to fuel collaboration, encourage the improvement of available materials, and aid in the dissemination of best practices.

Based on the open licensing of the intellectual property, the creator of a learning resource allows others to use their output for free. The most common licensing system is Creative Commons. It is discussed separately in chapter **2.1 Using OER created by others and sharing your own work.**

If you are new to OER, you may find the short article **7 things you should know about… open educational resources** by Educause useful in getting into terms with OER. Then, this guidebook offers more practical approaches and links to implement OER.



OER (Open Educational Resources) Introduction II by shelleynvcc on Youtube.

EU and UNESCO support OER

European Commission launched the 'Opening up Education' action plan to boost innovation and digital skills in schools and universities in 2013[1]. To help kick-off the initiative, the Commission launched a new website, Open Education Europa, which will allow students, practitioners and educational institutions to share free-to-use open educational resources. One of the key goals is to support development and availability of open educational resources (OER). Two of the four main parts deal with OER and Open Learning Environments:

1. Open Learning Environments: opportunities to innovate for organisations, teachers and learners

> *"Education and training institutions need to review their organisational strategies and improve their capacity to adapt, promote innovation and exploit the potential of technologies and digital content. Yet using ICT in training can reduce costs and increase flexibility in terms of time and space.*
>
> *Teachers should be able to acquire high digital competences, therefore initial teacher education should place a strong emphasis on digital-supported teaching methods (digital pedagogies).*
>
> *Learners expect to acquire the digital skills for the 21st century and have their digitally-acquired skills easily certified and recognised for further learning or work. Special attention is also needed to disadvantaged groups such as learners at risk of low achievement in e.g. science & technology or with learning difficulties."*

2. Open Education Resources: opportunities to use open knowledge for better quality and access

> *"OERs are generally produced in a limited number of languages (mostly English), and used by specific education sectors (especially higher education) and specific disciplines (e.g. ICT). The use of OERs in Europe is still too fragmented and not sustained. High-quality European OER must become more visible and accessible to all citizens. Therefore the Commission will launch a single gateway for OERs produced in Europe, federating existing platforms with advanced browsing and search features to help users find the appropriate content (Open Education Europa)."*

As of June 2018, the website Open Education Europa has been shut down. A new domain **School Education Gateway** is to continue its services.

UNESCO believes that "universal access to high quality education is key to the building of peace, sustainable social and economic development, and intercultural dialogue. Open Educational Resources (OER) provide a strategic opportunity

1 See **http://www.eunec.eu/european-heartbeat-news-eu/opening-education-innovative-teaching-and-learning-all-through-new** from which the next quotes are from.

to improve the quality of education as well as facilitate policy dialogue, knowledge sharing and capacity building."[2] In their 2nd World Open Educational Resources Congress 2017 UNESCO published an OER Action Plan.[3] It states, "OER are a strategic opportunity to improve knowledge sharing, capacity building and universal access to quality learning and teaching resources." In order to reach "its full transformative power for supporting the realization of Sustainable Development Goal 4 (SDG4)[4], OER needs to be more integrally a part of educational policies and practices".

Challenges of implementing Open Educational Resources

No doubt we are on the verge of the transformation of education. How is it that only few of us feel the ground trembling and see the signs of the change?

The UNESCO OER Action Plan recognizes five challenges to be met on policy level:

1. Building the capacity of users to find, re-use, create and share OER
    - Building awareness and skills to use OER
    - Sharing OER
    - Finding OER
2. Language & Cultural issues
3. Ensuring inclusive and equitable access to quality OER
    - Supporting accessible inclusive OER use and development
    - Supporting quality assurance mechanisms for OER
4. Developing sustainability models
5. Developing supportive policy environments

In addition to these policy challenges there are very practical issues a teacher/trainer must take into account: What is the quality of the ready-made resource? Will it fit to my students' curricula? Is the resource suitable for the situation/competence/context of my students?

Glenda J. Cox and Henry Trotter conducted a research on adoption of OER by teachers/lecturers in higher education settings.[5] According to them, there are several factors, some of which the educator has control over and others that are out of their own control. They developed a framework called "OER adoption pyramid", which divides the OER adoption factors into six categories according to the level of control that individual educators have over them: infrastructure access, legal permission, intellectual awareness, technical capacity, educational resource availability and individual (or institutional) volition.[6] The externally determined factors (at the bottom) form a foundation for personal volition and practical take on the issue. The framework can be applied in general and vocational education and training alike.

2 http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/
3 https://en.unesco.org/sites/default/files/ljubljana_oer_action_plan_2017.pdf
4 https://sustainabledevelopment.un.org/sdg4
5 Cox, G. & Trotter, H. (2017). An OER framework, heuristic and lens: Tools for understanding lecturers' adoption of OER. Open Praxis, 9An OER framework, heuristic and lens: Tools for understanding lecturers' adoption of OER: https://doi.org/10.5944/openpraxis.9.2.571
6 Interpretation of the framework partly based on Schuwer&Janssen

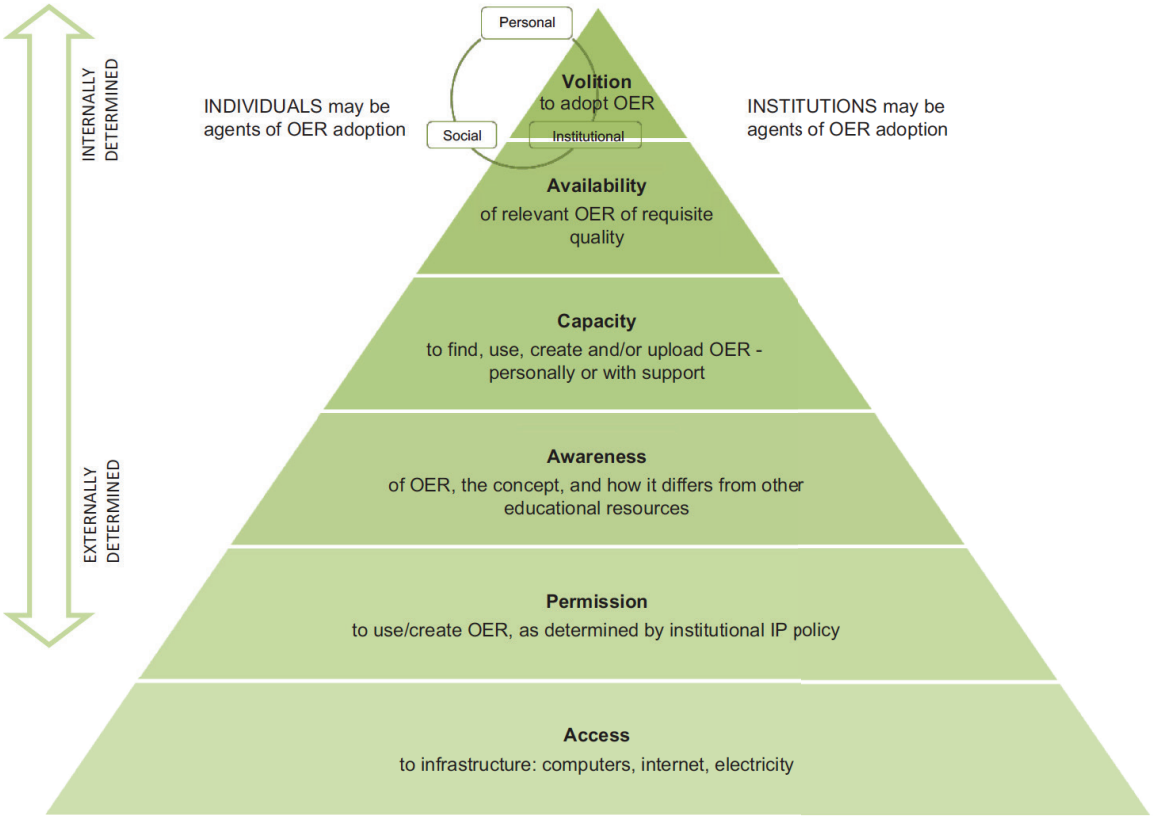


Figure 1: The OER adoption pyramid

Open Praxis, vol. 9 issue 2, April–June 2017, pp. 151–171

Much has been written about the inability of OER to reclaim the promises.[7] The big educational publishers have been quick to adapt their copyrighted content to offer multimedia, analytics, versatile assessment tools, etc. At the same time, the efforts of the OER field are scattered and mostly without needed resources. The world-leading educational institutions opt for the first, and the poorly resourced institutions e.g. in the developing world can't have neither, as their online connections are weak or missing.

Despite of the inertia that the educational change has, the current online tools, mobile devices, collaborative platforms, Creative Commons licensing and getting used to multilateral social media make it easier to take full advantage of OER. This open guidebook is one example of that and one resource to find out how to put the beautiful idea into practice.8

7 See e.g. Clements, K. (2016). Why Open Educational Resources Repositories Fail
8 See David Wiley: **Of OER and Platforms: Five Years Later**

1.1 OER and vocational education and training (VET / TVET)

This guide focuses on the use of OER in secondary vocational education and training (VET, or TVET). VET is oftentimes more expensive than general education due to the cost of equipment, text books and software applications needed in learning. Also, the world of work and thus the competences needed change rapidly. These set financial challenges as well for the learners as the institutions. OER is one option to help everyone to keep forwarding on their learning paths.

Robert Schuwer and Ben Janssen conducted a research on OER in TVET in 2017-18. They see In "Technical Vocational Education and Training: the 'dark continent' in OER" that "[TVET] is a key to provide citizens with the skills necessary to fully benefit from the digital transformation."[9] The use of OER in VET/TVET is not mainstream yet. The particular aspect that VET in many countries happens mainly in actual work places and not in a classroom setting, means that practical training is learning by doing and contextual.

This guidebook is designed to help the reader to step forward in using and creating OER, both in classroom or work-based learning settings.

1.2 Concepts

Creative Commons

Creative Commons is a nonprofit organization that works to increase the amount of creativity. It provides free, easy-to-use legal tools (licenses) that make it easy to change their copyright terms from the default of "all rights reserved" to "some rights reserved."

Open Education

Open education is education without academic admission requirements and is typically offered **online**. Open education broadens access to the learning and training traditionally offered through formal education systems.

Open Educational Resources

Open educational resources (OER) are freely accessible, **openly licensed** text, media, and other digital assets that are useful for teaching, learning, and assessing as well as for research purposes.

Open Learning Environments

Open learning environments are an area of the open education ecosystem where open online courses and various other learning activities take place.[10]

9 **Technical Vocational Education and Training: the 'dark continent' in …** See chapter 3.2 under Research on OER in VET
10 Hans Põldoja in **The Structure and Components for the Open Education Ecosystem**

Open Source

When a software program is open source, it means the program's **source code** is freely available to the public. Open source licenses are legal licenses to use the code under the conditions specified in the license.

Personal Learning Environment

Personal Learning Environment (PLE) is the combination of tools, people, and services that make up individualized resources and approach to one's own learning.

Public Domain

Public Domain means the author gives up their right to the copyright of the code, and it can be used in any way. In many countries it is legally not possible to give up copyright, so using public domain code poses problems in some professional contexts.

Royalty-free

Royalty-free refers to the right to use copyright material or intellectual property without the need to pay royalties or license fees. It may require a paid plan on a platform to be entitled to download royalty-free material, and there may be specific limitations how to use such material.

Chapter 2. Use, remix, share – OER in practice

This section helps you as a teacher or trainer to take advantage of OER in finding or sharing resources–photos, audio, video, and more–as OER. If you need OER courses or learning modules, there is a wide variety of web sites that host such. A wide selection of these is listed with descriptions in chapter 4 Resources.

The most obvious way to take advantage of OER is to use learning resources created by others. You can replace expensive textbooks, learn from instructive videos, and usually also modify those resources for your own and your students' needs. You may also find illustrative OER photos for your own presentations or other learning material.

As an educator you can also encourage your students to use OER for their own outcomes. Instruct them how to search for OER and how to interprete the licence. They must first understand how they are allowed to use the very photo, video or any other document in question.

Five steps to master OER:

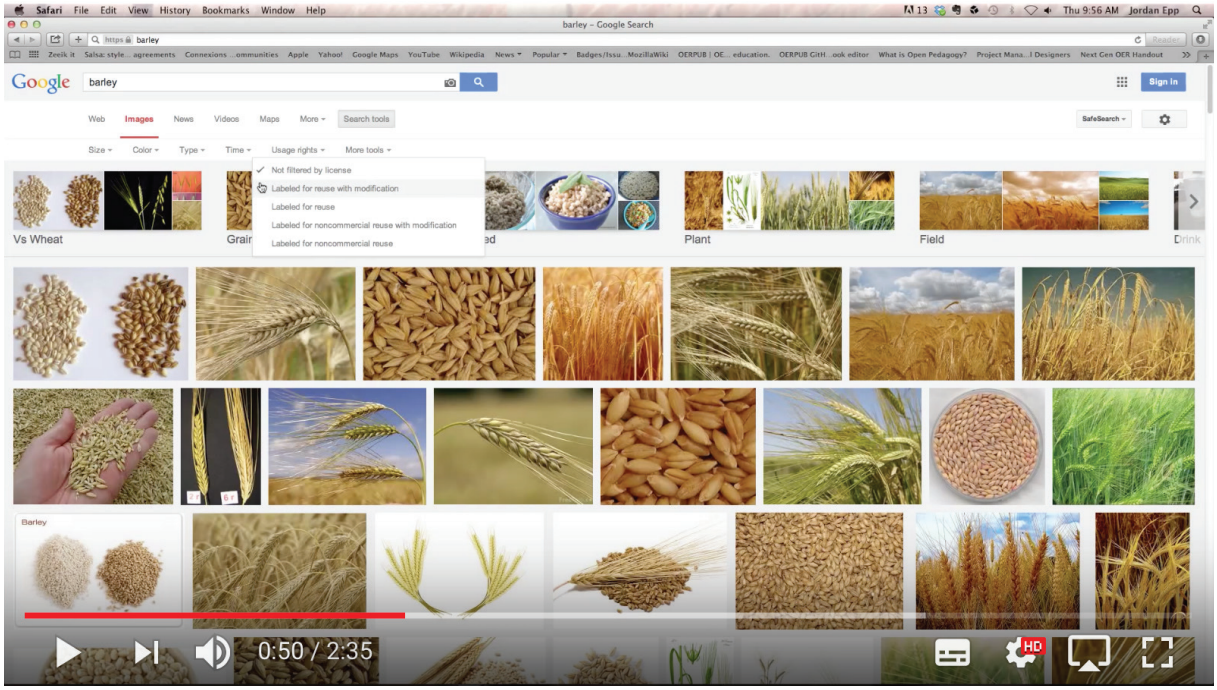
1. **Find OER**
2. **Check the licensing**
3. **Verify the quality of the material**
4. **Use and remix**
5. **Share your own work as OER**

2.1 Find OER

OER is most often shared under a Creative Commons (CC) license. This means they are generally free to use. That information is attached to the resource page, so that search engines can filter your search and show only open content. However, there are different variations of this license, as well as different stipulations.

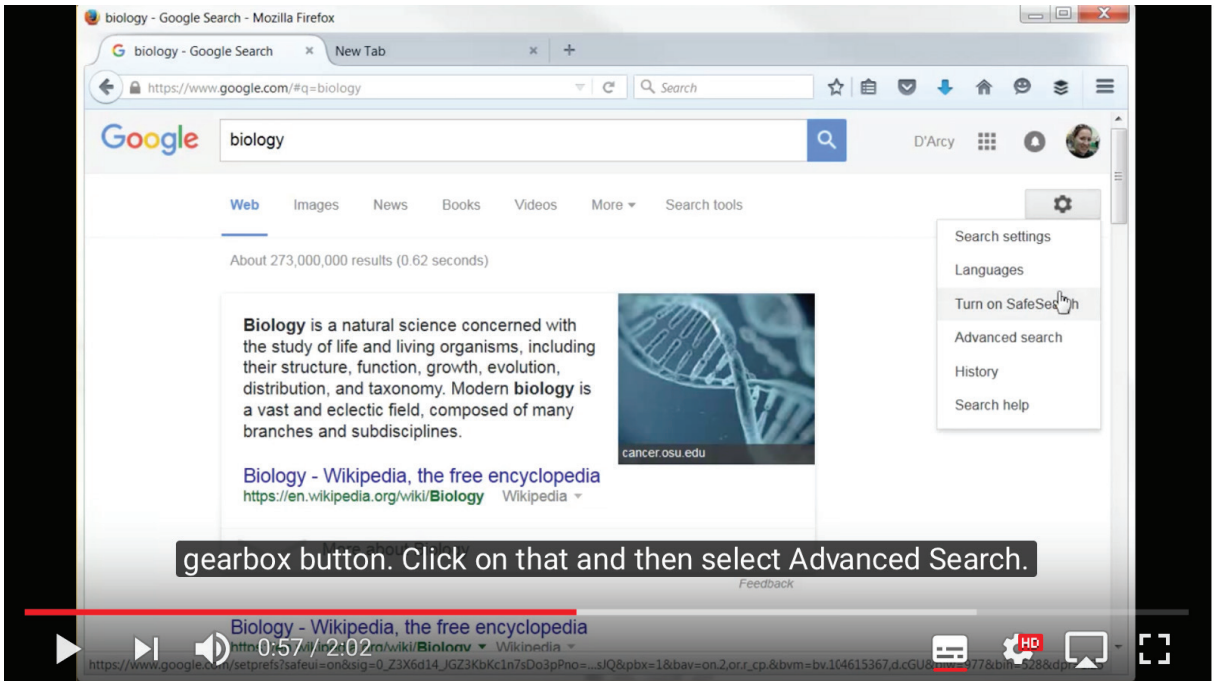
It is not always self-evident where to find out e.g. the specific licensing information or the creator information on the content page. Here you will find step-by-step instructions for most typical cases and search engines. Some of the instructions are on video. If English is not your primary language, you may find turning subtitles on helpful.

Google Image Search and Wikimedia



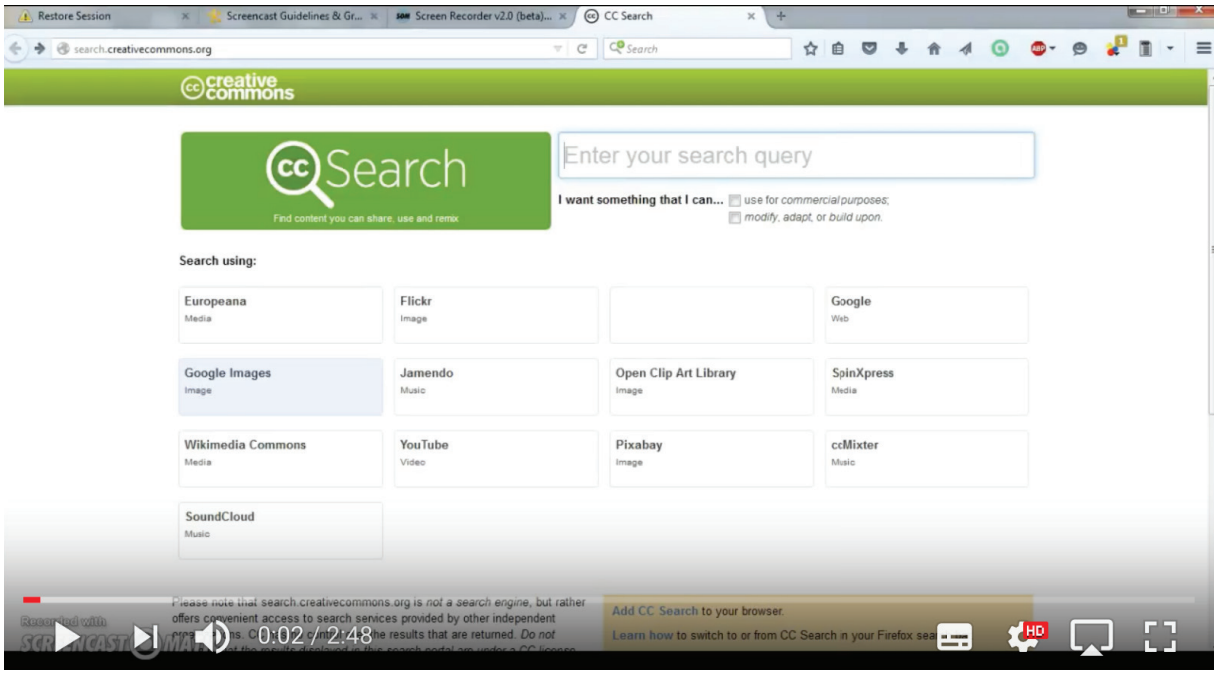
The video **Searching for OER images on Google** by Jordan Epp on Youtube (shared under CC BY license) walks you through the process of finding CC-licensed photos on Wikipedia/Wikimedia.

Google Search, any type of OER content



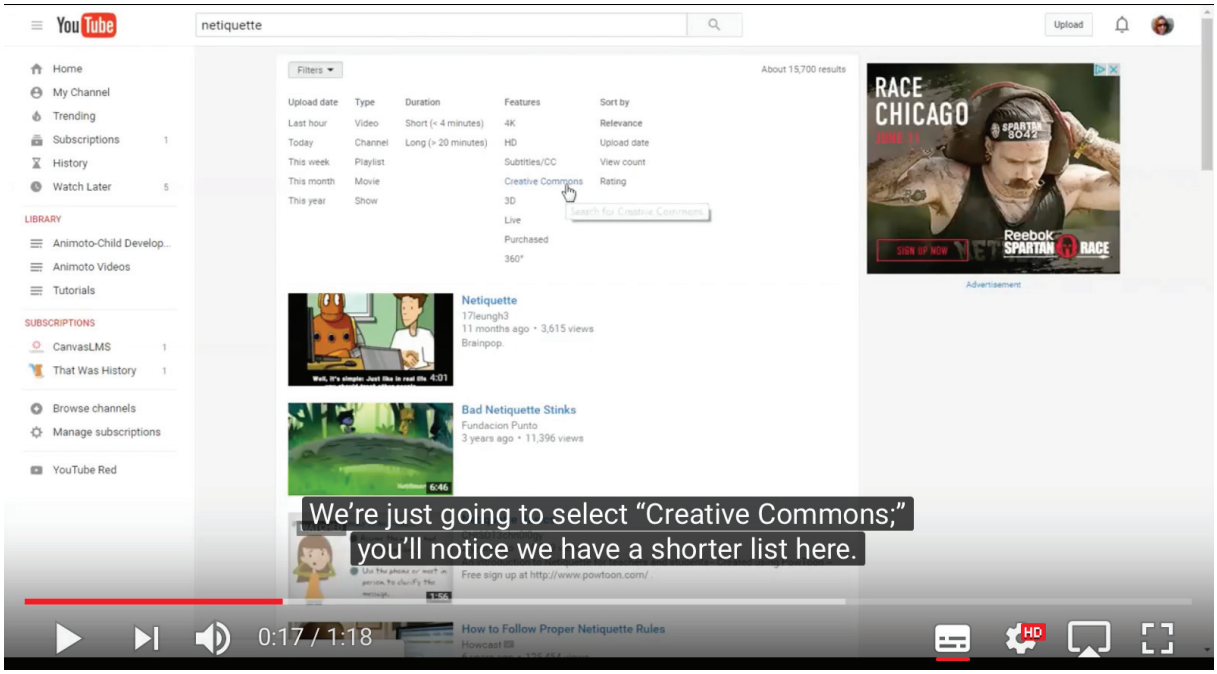
The video **Searching Google for OER** by Consortium Library on Youtube (shared under CC BY license) walks you through the process of using Google search Advanced settings in order to find any kind of open content.

Using Search.creativecommons.org



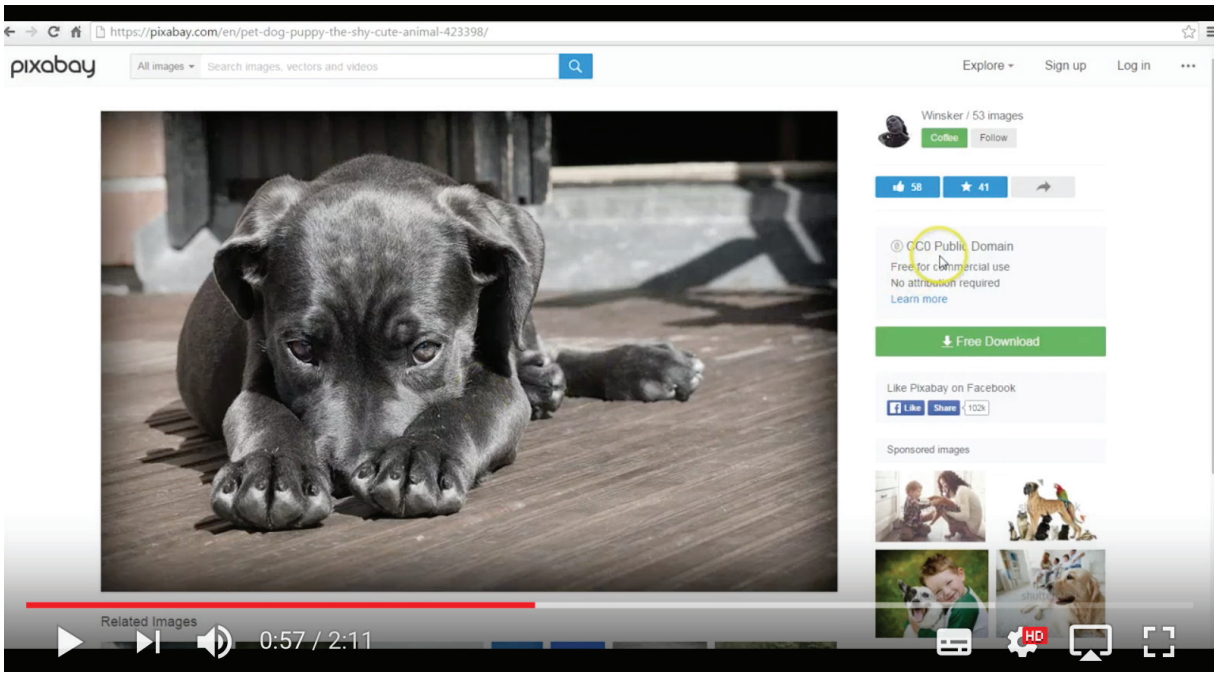
The video **Search for Creative Commons content** by Stephanie Hendricks on Youtube (shared under CC BY license) shows how to use search.creativecommons.org

Finding OER videos on Youtube



The video **Filter Youtube Videos by Creative Commons License** by Denise Caparula on Youtube (shared under CC BY license) shows how to use Youtube search to filter only CC-licensed videos.

Finding public domain (CC0) images on Pixabay



[How to find and download public domain images on Pixabay] by Richard Byrne on Youtube (shared under ordinary Youtube license, embedded and linked with permission). CC0 license and “public domain” mean that you are free to use content even without crediting the author.

2.2 Check the licensing

If the resource you find is “a work” (photo, video, even a presentation), its creator has the copyright whether or not the © symbol is used. Others don’t have rights to use that work publicly without a specific permission. In order to help expressing how the creator permits others to use the work there are licensing systems. With their help it is easy to filter online content and get the information under what conditions a work can be used. The most practical and global system is called Creative Commons.

The Creative Commons copyright licenses and tools let the author express what rights and obligations there are to use their content. Every CC license help creators retain copyright while allowing others to copy, distribute, and make some uses of their work — at least non-commercially. Every CC license also ensures licensors get the credit for their work they deserve.

In a CC license there is always first the “CC”-mark and then the specific conditions. Below you will find basic info on the licenses. Usually when you see such an image or text, it functions as a link to a page with a full description of the license. **Visit this page** to read more on the licenses.

License icon	License as text	License terms
	CC BY	**Attribution** Name the source
	CC BY-SA	**Attribution-ShareAlike** Remix, use, even commercially Name the source and license your own work under same license
	CC BY-ND	**Attribution-NoDerivs** Use, even commercially but do not remix or alter Name the source
	CC BY-NC	**Attribution-NonCommercial** Remix, use, but not commercially Name the source
	CC BY-NC-SA	**Attribution-NonCommercial-ShareAlike** Remix, use, but not commercially Name the source and license your own work under same license
	CC BY-NC-ND	**Attribution-NonCommercial-NoDerivs** Use, but not commercially, and do not remix or alter Name the source

There are different versions of CC licenses. The current is (4.0), and in many cases you see that specified in the license information.

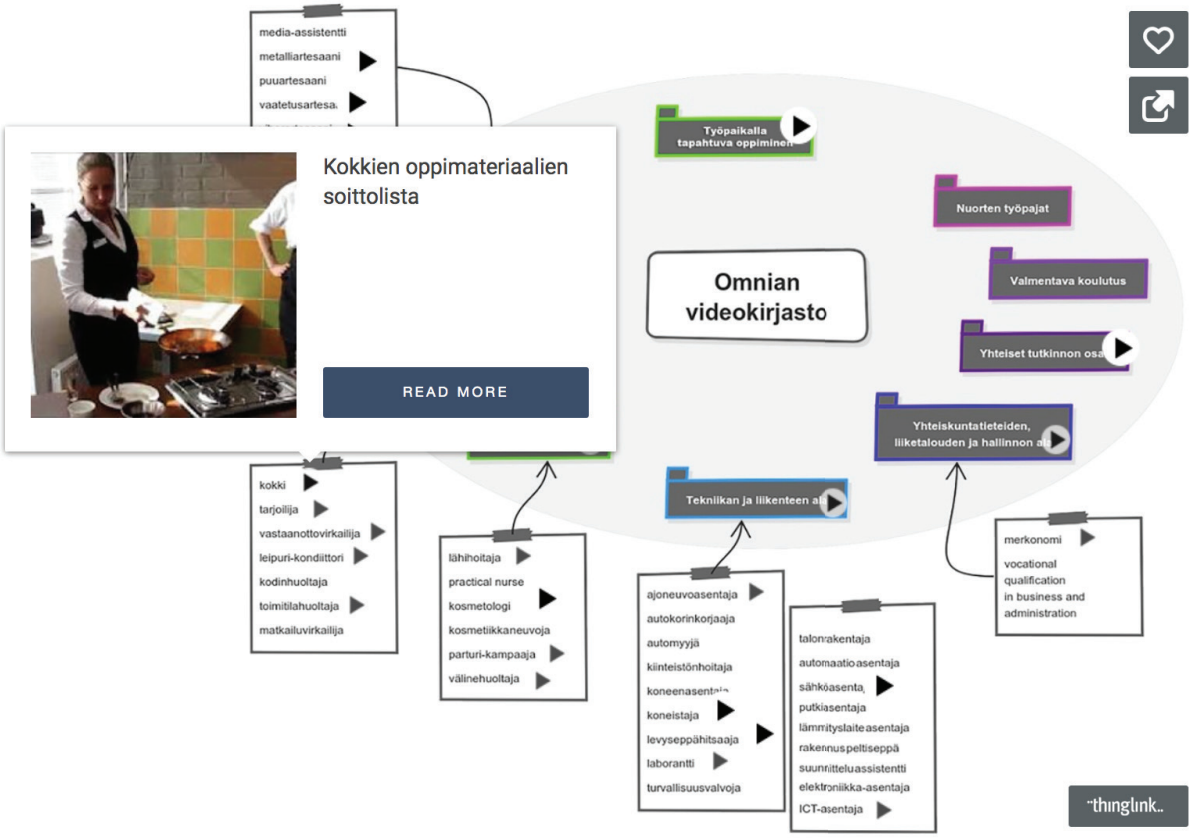
In addition to these licenses, you may see “CC0”. It means that the content is public domain and free to use any way you like, even without referring to the source/creator.

2.3 Verify the quality

As an educator, you want to ensure that the educational resource passes your quality assurance. The OER may be free and save your work but is it really in alignment with your learning objectives and suitable for the situation and context of your learners? Are the facts correct? Is it as effortless to comprehend as your own expression would be? Check the resource always by yourself first. In some cases VET teachers use even material that has some faults, and use that for learning too, e.g. by asking students to find also what was wrong on the video.

If you are using your online course or digital learning content from previous year, check also that the links still work. Nothing is more frustrating for the student than finding out that links are dead or that the video requires Flash or other bygone technology. Remember also that in many cases students reach the resources with mobile devices. Does the resource adjust to that?

EXAMPLE: OER video playlists for VET students



In Omnia, Finland, an interactive image provides selected playlists of learning videos.

Step 1. VET students and their teachers collect lists of useful videos. In order to make it a learning task, some teachers have instructed their students to select useful videos and presenting reasons why they have selected just those.

Step 2. The teachers provide the links of qualified videos to the VET institute library who manages the list under their Youtube account in order to keep everything tidy, up to date and easy to find.

Step 3. The library personnel have created and administer the interactive image showing the different competence areas and learning paths of the institute and attach the video playlist to this interactive image created on Thinglink.com.

OER page containing the image and guidelines: **https://oppiva.omnia.fi/videokirjasto/**

Link to the infographic: **https://www.thinglink.com/scene/864828603915829248**

2.4 Use and remix

If the license allows, you can remix the content, e.g. crop a photo or add an audio clip to your own video. Remember to cite the source. Here is an example:

You've found on Google search an image on "education robotics" and visit the page. In Wikipedia, you find the license information beneath the photo:

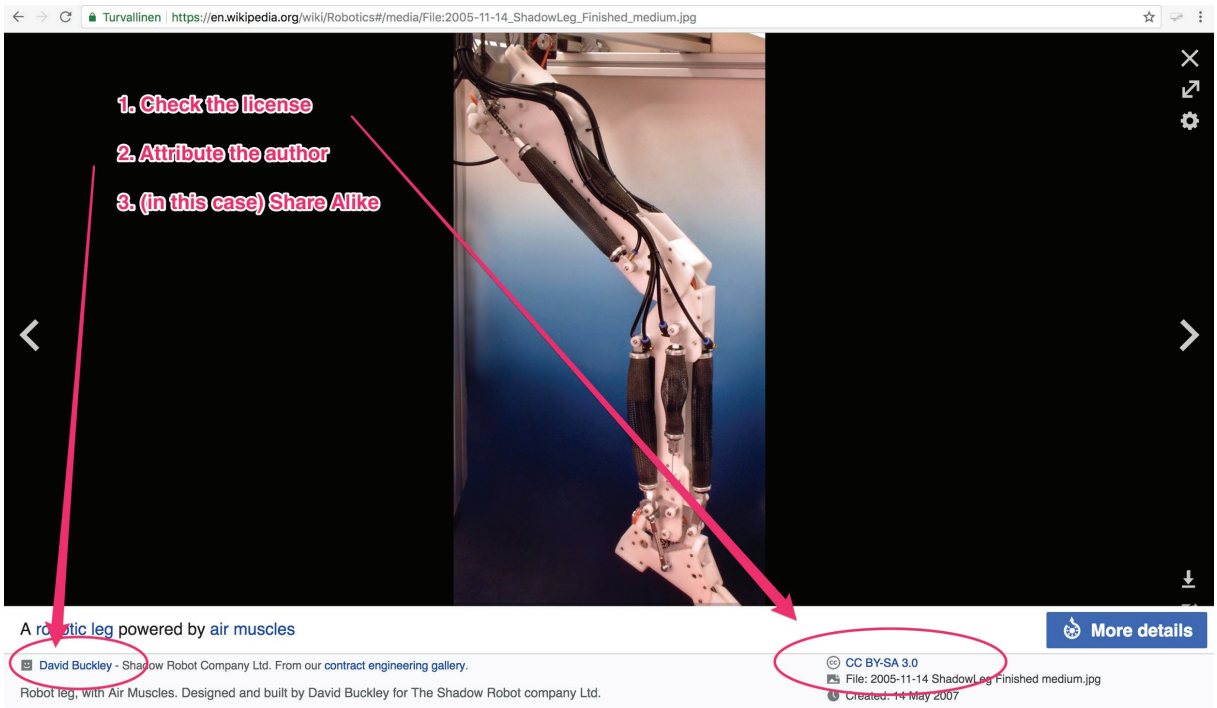


Photo of a robotic leg by David Buckley, Wikipedia

More examples on finding the licensing on various platforms will be found on videos above, section "1. Find OER".

Think also about your pedagogy and how to activate your students' learning process by involving them in collaborating and producing OER content that may be useful for others. Support their cognitive skills necessary to determine the quality of online content, and experimenting with peer-based assessment models and reputation mechanisms. In many cases the students may well be familiar with such, as they are common in social networking and on e-commerce sites.

EXAMPLE: Teacher and VET student producing OER together

A VET teacher produced an open learning module together with her catering students. It was executed with two different student groups in three phases in Omnia, Finland:

Phase 1. Teacher and students produce short instructional videos for learning the use of the restaurant equipment etc. Videos were uploaded to Youtube under CC BY license.

Phase 2. A photo of the restaurant is taken, and used as a background image for the videos that are playable as interactive hotlinks on Thinglink.com. One version having Finnish video clips, another havin English video clips.

Phase 3. Small QR codes linking to the videos are attached to the same equipment in the restaurant as the interactive online photo has.

Outcome: students learn e.g. cleaning the espresso machine both online and on-site

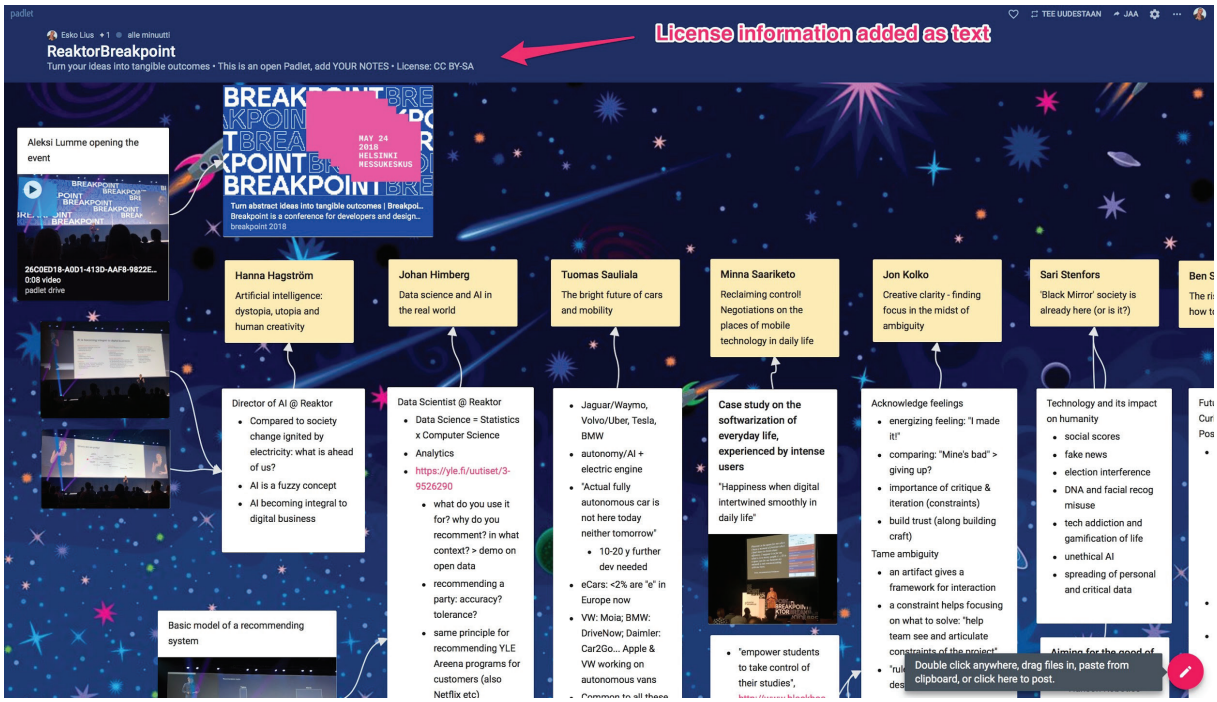
"**Ravintola Henricus**", links to Finnish videos

"**Restaurant Henricus**", links to English videos

2.5 Share your own work as OER

Other teachers, professors, and/or students will benefit from your learning content when you share it as OER, be it improving OER created by others or your original input. Giving your work a CC license is a snap. Many educators license their content using the features of technology platforms like Flickr or YouTube.

It is always most evident for others to understand how they are to use your content if you mark it with the CC badge. Even adding the textual information helps. Here is an example of conference notes taken on Padlet.com:



Creative Commons license chooser helps you to choose between different options and to get a license badge. See also: Marking your work with a CC license.[11]

11 https://creativecommons.org/2016/09/13/find-and-use-oer/

Chapter 3. Research on OER in VET

3.1 Survey conducted by IV4J

In order to gain insight on the use of Open Educational Resources (OER) in Europe, Omnia/Finland explored reseach on the topic and conducted a separate study. The goal of this study was to find out if educators themselves or their student create or use OER. The study on OER was executed as an online questionnaire in April–May 2018.

The questionnaire link was shared by the IV4J project members via email and online in social media. The exact reach of the questionnaire link is not known. The estimate – based mostly on the Tweets and Facebook sharing by Esko Lius who conducted the study – is that it got approximately 4000-8000 impressions on social media.

We got 55 responses to the questionnaire. All of them were from EU countries. Most of the respondents were from Italy, Finland and Germany.

Vast majority, over 80% are teacher, trainers or counselors in secondary vocational education and training.

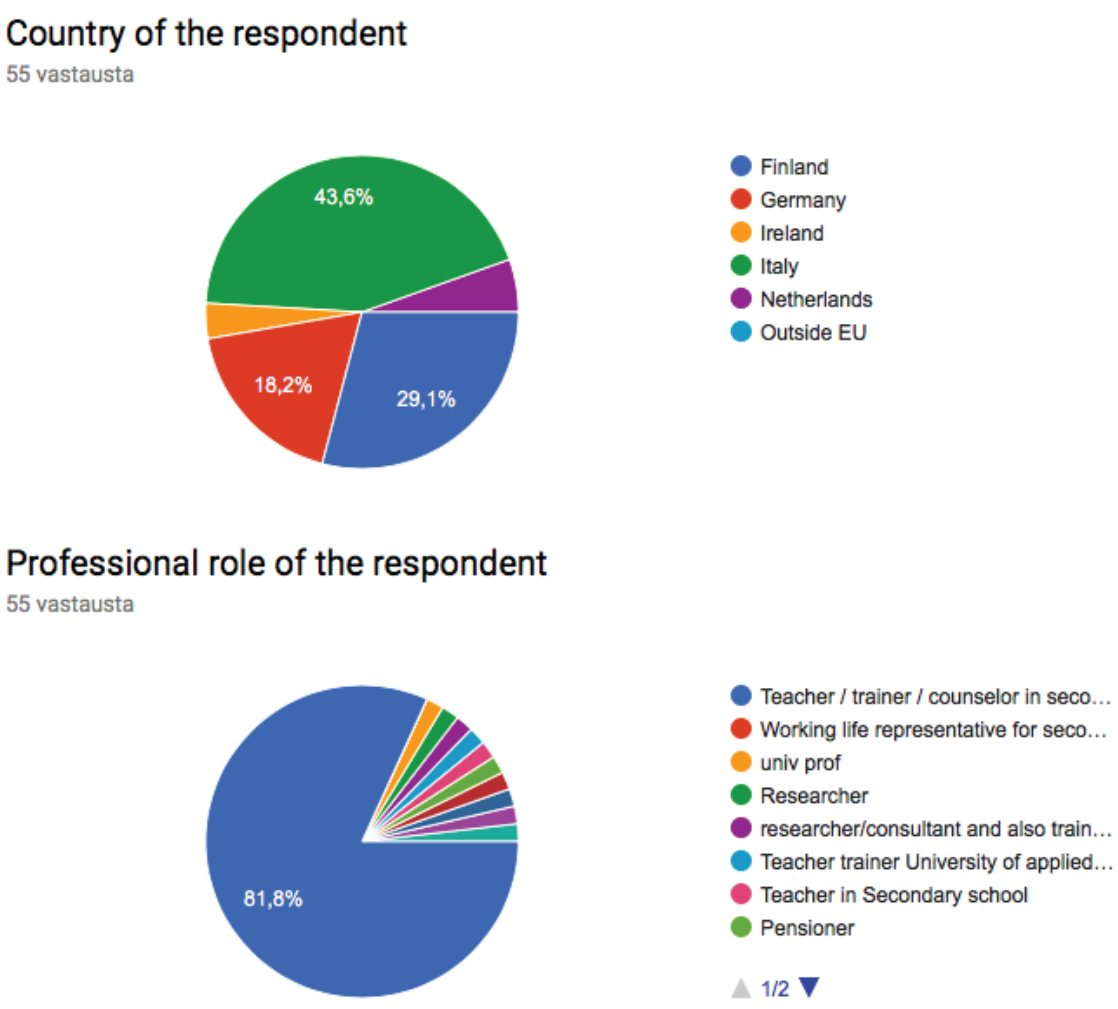


Figure 1. Distribution of the responses by country and the professional role of the respondent.

The topic and the method of the study are such that we can assume most respondents are more familiar with digital tools in learning than an average teacher/trainer, and more aware of Open Educational Resources overall. 60% expressed that they know how to find and interprete the licensing / usage rights information. Based on VET teacher training given by the researcher in Finland and other European countries, that is substantially higher than the share of OER-savvy teachers/trainers in general.

The research "Technical Vocational Education and Training: the 'dark continent' in OER" published in April 2018 had separate questions for finding out whether the respondents where respondents were asked to rate themselves in terms of experts in OER, and the question wherein was asked whether one knows what the CC-BY logo stands for.

> *"39% of the respondents who indicated to be (somewhat) expert in OER, did not know the meaning of the logo or had never seen the logo. For respondents who are teacher or trainer, this mismatch between OER expertise and knowledge about the CC-BY logo even is 53%. One might conclude from this that there is a great non-awareness of what OER is. One can also conclude that people who are experienced in TVET have in practice a broad view of what open educational resources for TVET are."*

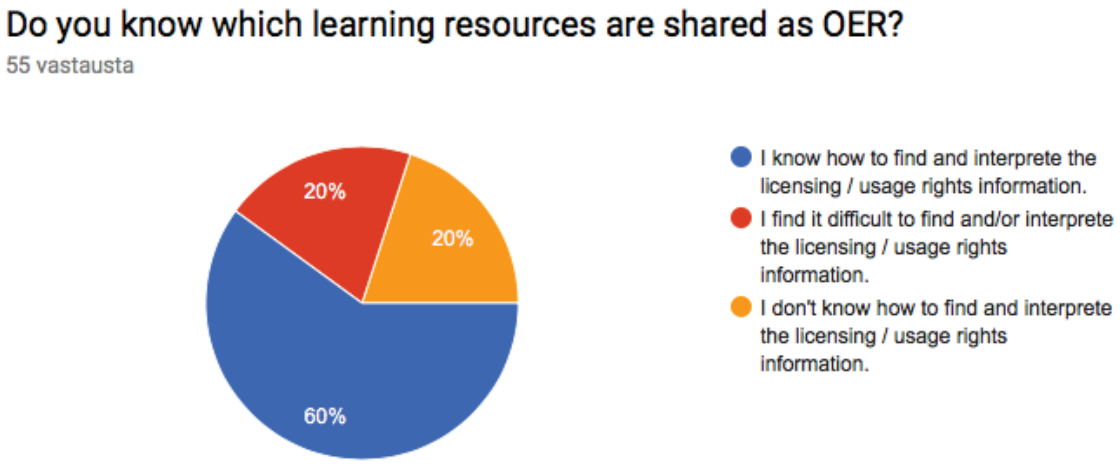


Figure 2. Do you know which learning resources are shared as OER?

Thus the study most likely does not represent accurately the level of OER awareness or use in EU. Nevertheless, it may well depict how OER is used: whether the educators utilize material produced by others or create OER themselves, and whether the students use or create OER in their learning.

What is the use of OER like?

To the question "As an educator, do you utilize or produce OER?" 71% responded that they use OER produced by others. Some further face to face discussions with few study participants in Finland revealed that the main category of OER here are photos. For example Pixabay.com is used because it is easy to get good quality images on CC0 license to enrich own learning material.

The amount of respondents who share their own material as OER was high, too. 40% selected this option. We didn't gain any further information on what kind of material educators share as OER. According to knowledge accumulated otherwise, we may assume that it is mostly learning material like presentations.

15% do not use or produce OER and 9% stated that they either don't know or the question does not apply to them.

As most of the responding educators use or produce OER, it is only natural that most of the students use OER as well: 56% use OER provided by the teacher. 46% tell that their students use OER they find themselves. That indicates that the basics of OER has been taught to them. The same applies to the students who produce digital learning material as OER. The amount of students producing digital learning material themselves is high in this study: 26%. 11% say that students do not utilize or produce OER. 16% say that they don't know or question does not apply to them. The latter may mean that the respondent doesn't teach.

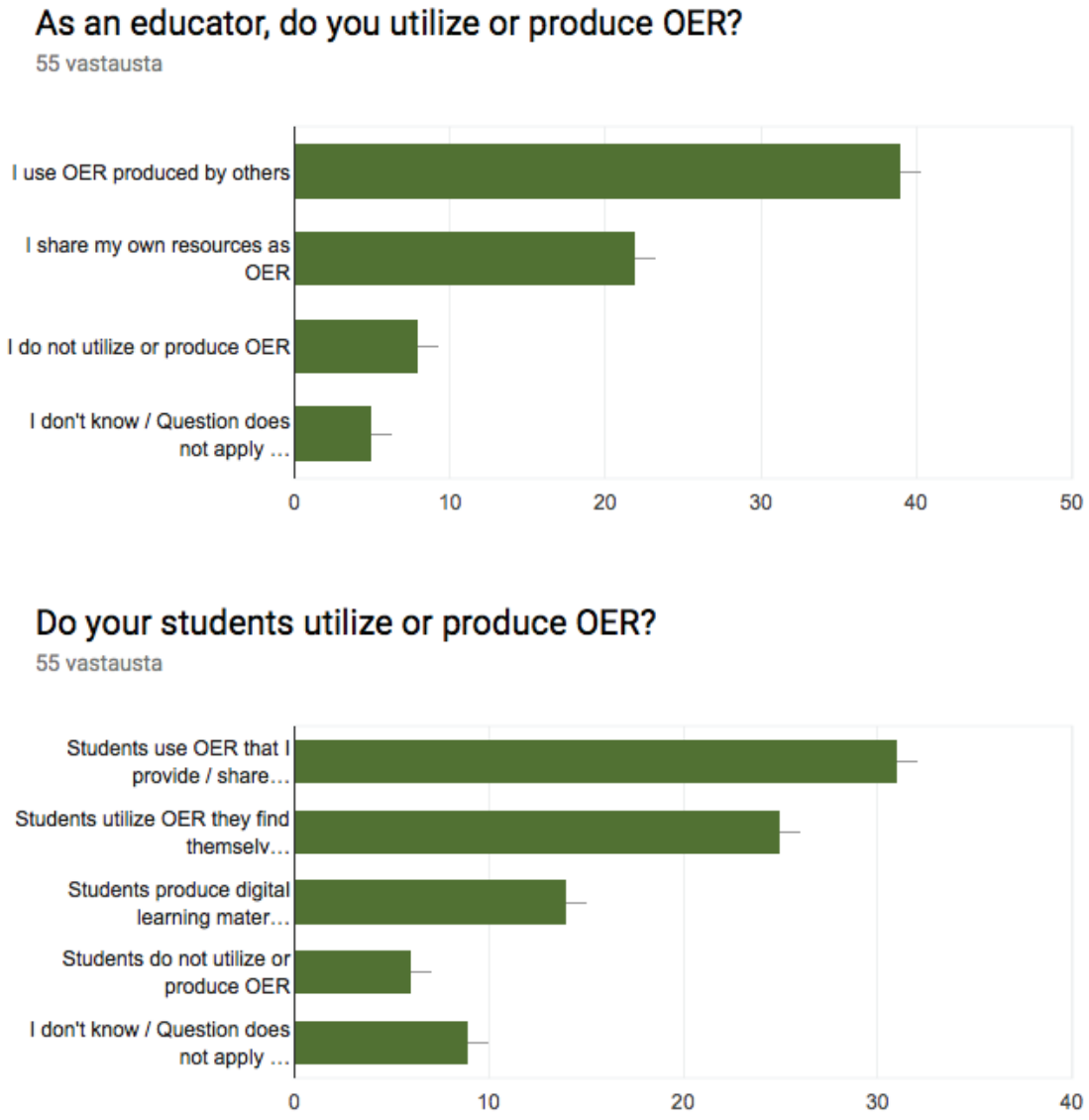


Figure 3. Do you as educator or do your students utilize or produce OER?

What kind of OER is valuable and where to find it?

Contrary to expectations, OER still images/photos was not the most valuable resource category for learning. They may be used most often but most valuable were according to this study OER textbooks (51%) and OER videos (64%). Also other OER online resources, simulations and repositories (e.g. Wikipedia) were found valuable by many (32–26%). Two responses stated that they do not know or this does not apply.

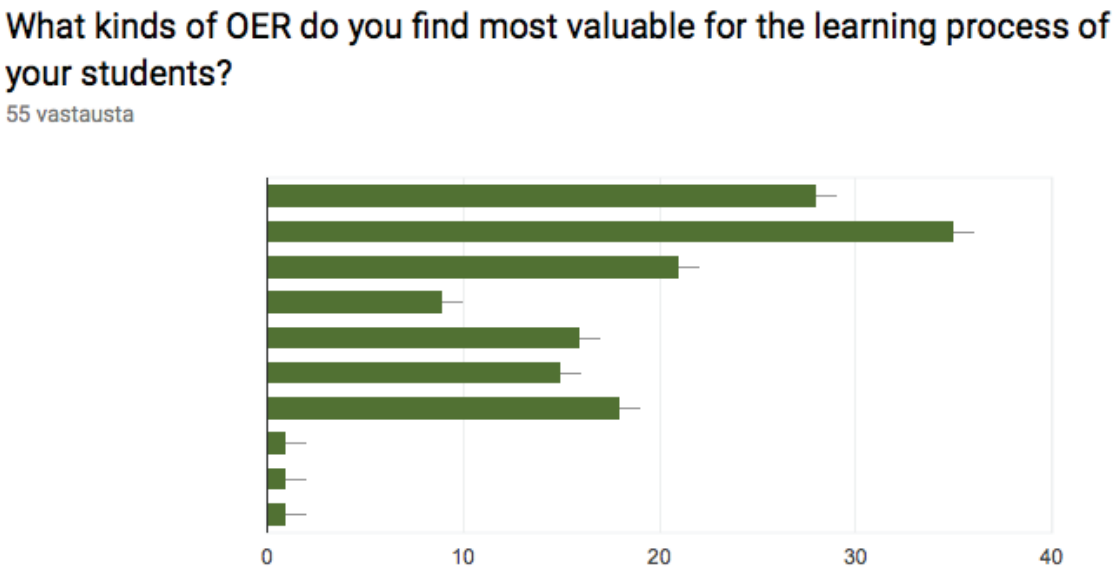


Figure 4. What kinds of OER do you find most valuable for the learning process of your students?

The sources for OER are a plenty which was clearly seen on the wide variety in the responses. The request to "Name a few essential OER sources for you / your students" was interpreted in varied ways. One can divide the input to five main categories:

1. Most common was to name general platforms that support open licensing and easy web 2.0 sharing. Such were e.g. Wikipedia/Wikimedia Commons, Youtube, Picasa, Wikibooks, Creativecommons.org, http://wikieducator.org and Slideshare.
2. Then there were mentions of topical or curated platforms, e.g. BookBoon, Coursera, edX, Hyvät käytännöt ("Good Practices" by Finnish National Agency for Education), TEDTalk
3. LMS and similar national/local/restricted services were named as well: **www.risorsedidattiche.net**, Moodle, Ilias, oppiva.omnia.fi (for Finnish VET educators)
4. Particularly for VET students: **http://www.vet4startup.eu/**, ent-net.eu
5. Some responses listed online tools and services being used for sharing OER: Google Drive, Onedrive, Trello, PDF.

They will be discussed further later in this report in section "Practical training schemes and tips".

When asked "What initiatives, organizations or repositories IV4J project should be aware of?" the responses were more focused towards VET, entrepreneurship and innovation.

Some responses addressed links to national and EU repositories like https://www.na-bibb.de/erasmus-berufsbildung/, https://www.wbl-toolkit.eu/, and https://www.risorsedidattiche.net/. Half of the responses mentioned categories and topics:

teacher qualification, councelling to older teacher/trainer how to use, a good manual, a vet textbook, useful manuals and OER textbooks.

One respond provided a useful link to "Technical Vocational Education and Training: the 'dark continent' in OER" by Robert Schuwer and Ben Janssen, a reseach published in April 2018 http://resolver.tudelft.nl/uuid:9c018fa0-7e8e-4d1a-8a8e-3fbdf6ef4318 It is discussed separately in chapter XX.

3.2 "Technical Vocational Education and Training: the 'dark continent' in OER" by Schuwer & Janssen

The study has found broad support for the opinion that OER in TVET has the potential to offer a big contribution in accomplishing the task of skilling people. But it is also found that a large gap exists between asserting this opinion and activities to actually adopt OER in TVET. The following findings support the statement about the gap between intentions and actual implementation.

"The literature review revealed that no substantial research on OER in TVET takes place or has been reported upon. There is a highly uneven pattern of projects and programs: in some countries awareness of OER has still to begin; other countries (e.g. United States) have a policy on OER in TVET. The main target group in activities to realize mainstreaming OER are teachers and trainers, and less the learners."

The main motives to adopt OER in TVET and main opportunities for OER in TVET, found in the survey and in the interviews are:

Technical education is more expensive than regular education. OER is one option to extend more equally access to these materials. Especially videos are important means to realize this;

OER increase efficiency, by sharing short courses among institutions;

OER contribute to quality improvement when used by teachers: improvement of their own technical knowledge and providing updated learning resources to learners;

OER enables a more quickly response to market needs;

OER contribute to inclusion and increasing equity;

OER enables collaboration between teachers and labor market, teachers and learners and among teachers;

OER enables cost savings for students.

The main barriers that prevent mainstreaming OER in TVET are for a part the same as those in other sectors: lack of vision and supporting policy (both national and institutional), lack of awareness of OER among teachers and policy makers and human factors (fear of sharing because of possible copyright infringement, unwillingness to share), high teaching load and an infrastructure with insufficient capacity. But there are also specific characteristics of TVET that hinder publishing and using OER:

Teachers and trainers in TVET mostly have no educational background;

Repurposing of OER is important in TVET. Teachers and trainers in TVET often have insufficient (ICT-)skills to do this;

Cultural and language issues hinder reuse across borders;

ICT infrastructure is inadequate in many areas;

For non-formal TVET, learners in TVET have insufficient skills to be able to self-learn using OER. A teacher/trainer is necessary to guide them along a learning path;

In TVET skills development is important. Many available OER are about theory and not about practice and skills;

TVET is a complex area, fragmented over formal and non-formal education, a lack of standards and low status in many countries. This makes overall policies and action plans difficult to accomplish.

2nd OER World Congress in Ljubljana, similar conclusions about the uptake of OER were drawn, resulting in the Ljubljana OER Action Plan 20172. http://www.oercongress.org/wp-content/uploads/2017/07/WOERC2017_Ministers_statement.pdf

Key conclusions:

Profound adoption of OER in TVET requires the creation of education and training ecosystems of TVET wherein stakeholders at different levels, institutional, sectoral, national and international, agree, cooperate and share information and resources. Inclusion of and engagement with national government and stakeholders are a prerequisite, and it requires at national level an enabling policy for innovation of TVET in general and adoption of OER in TVET in particular.

It also requires institutional policy and capacity planning, most likely also the adaption of organizational structures, innovative staff and teacher development, ICT skills development, and instructional design capacity development (flexible and blended model of TVET, and OER for TVET) , and last but not least adequate (ICT) infrastructures.

One can also conclude that people who are experienced in TVET have in practice a broad view of what open educational resources for TVET are. (...) For non-formal and informal self-learners, the free access characteristic of OER is important, not the rights to repurpose them as expressed in an open license. (...) But, given the major challenges facing TVET, using whatever is available as freely available and accessible resources is understandable. One could see it as the first step towards the use of OER.

Recommendations

Based on these findings, we formulate the following recommendations:

- Programs for creating awareness and capacity building should be more intensified and broadened. The last couple of years, especially the Commonwealth of Learning has been active in this field. However, there is a need for more of these programs.

- Adoption of OER calls for more than a series of one-off interventions, projects or funding. We recommend creation of education and training ecosystems of TVET and at national level enabling policies for adoption of OER in TVET

- Programs to adopt OER should be put into a larger context of innovation and not as a sole activity. E.g. embed activities on adoption of OER in TVET in larger programs using ICT to innovate TVET

- Create national and international repositories of training materials and case studies of good practices

- Make use of national and international “OER-TVET champions”

- Create an evidence base, among others on cost effectiveness of adoption of open licensing arrangements and harvesting existing OER

Our study has been exploratory. The literature review has revealed that there are not many publications – available under open access - on OER in TVET. On this basis we may argue that OER in TVET is not an issue researched and discussed in international literature comparable to OER in higher education or secondary and K-12 education.

3.3 How to measure your own OER readiness and take steps to utilize OER

In order to measure the impact of OER adoption in your setting, you may find **OER Reseach Toolkit** useful. It helps to set reseach questions and to analyse data of the impact on cost, student outcomes, student and faculty use, and perceptions of OER.

Other useful places to start with implementing OER on an institutional level are the **OER Strategy document** and the **listing for the tag "OER Policy"** on the Commonwealth of Learning site, as well as Wikieducator's **OER Handbook**.

The OER adoption pyramid by Cox&Trotter presented in chapter 1. Introduction to OER provides guidelines to recognize the issues on various levels.

There is also a short **K-12 Educators FAQ** that might be helpful for those not yet familiar with OER.

EXAMPLE: OER as an institution-wide practice

Omnia, Finland, has instructed its teaching staff to produce all learning material as OER under CC BY-SA (4.0) license. Training sessions and information lectures are held in order to spread awareness of OER and of the policy. The presentation template has the proper CC badge in place. There is digital pedagogy support personnel to help with questions relating to copyright and OER issues.

Their open policy description page is available in Finnish: **https://oppiva.omnia.fi/tekijanoikeudet/**

Chapter 4. Resources

Here you will find recommended websites and other online services that deliver OER content. All listed support Creative Commons licensing system. That doesn't mean all content found on these is OER or CC licensed. See chapter '2. Use, remix, share – OER in practice' for more information on how to search, use and share OER.

There are many articles listing places to find OER beyond the listing of this Guidebook. One recommendable and up-to-date (as of May 2018) is **120+ Places to Find Creative Commons Media**.

Wikipedia has an article on **Public domain resources**. There are many links to educational resources, too. The article is available in several languages, and those versions have been localized to contain public domain resources in their languages.

Categories:

- **General search engines**
- **Audio**
- **Images and photos**
- **Texts**
- **Video**
- **Course material and learning modules: English and/or multi-lingual sites**
- **Course material and learning modules: local language / national sites**
- **General info on OER and/or ICT in TVET**

4.1 General search engines

Creative Commons Search

A meta-level search engine by the Creative Commons organization. It works as a simple front end to several search engines.

Google Search

The general search engine that helps you filter the results including only CC licensed content.

4.2 Audio

Audio clips and music are wonderful in enriching your media, be it presentation, video or website.

ccMixter

The basic idea of ccMixter is that musicians upload music and producers and DJs remix it. SignUp in order to upload or download.

FreeMusicArchive

The search engine of FMA lets you filter your search e.g. according to specific CC licenses. So, if you want to add music to your video, you can easily exclude those licensed as “NoDerivatives”. No SignUp required to download.

Freesound

Freesound is a huge collaborative database of audio snippets, samples, recordings, bleeps, ... released under Creative Commons licenses that allow their reuse. It has a wide variety of soundscapes from a summer meadow to a city underground station to hip hop loops. SignUp to download.

MusOpen

Curated and focused on classical music, MusOpen is a great place to download music and also sheet music. SignUp to download. The free account plan lets you download 5 files per day.

4.3 Images and photos

See also article **Web 2.0 Tools: Photo Sharing** that sheds light on choosing a photo sharing platform and presents major photo sharing sites and social media platforms, written particularly vocational education and training in mind.

Flickr and SmugMug

Two of the big photo repositories are merging. Currently they continue as separate services but user accounts and TOS may change during 2018. In addition to users’ photos (most of CC licensed) Flickr has a vast Flickr Commons section which has thousands of photos from image arcives of museums and similar. All CC licensed images can be accessed from **this page**. No SignUp required to download. SmugMug is only for paid accounts.

Pixabay

Pixabay is one of the best sites to find open, high-quality visual content. Everything uploaded to Pixabay is shared under the Creative Commons CC0 license, meaning that you can use the content without crediting the author. Pixabay shows also content from Shutterstock. They are copyrighted and may confuse the user searching for royalty-free photos. No SignUp required to download. See also **Unsplash** which is a similar site for high-quality free content.

Wikipedia and **Wikimedia Commons**

Wikimedia Commons by Wikimedia Foundation–that we know of its Wikipedia–has a vast collection of CC licensed media.

4.4 Texts, eBooks, and other

BookBoon

Bookboon's free online textbooks for students are written by experts and professors and cover topics such as economics, statistics, IT, engineering and natural science.

LibriVox

Freely available audio books.

LoyalBooks

Public domain audio books and ebooks

Project Gutenberg

Project Gutenberg offers tens of thousands free eBooks. You will find the world's great literature there, with focus on older works for which copyright has expired.

WikiBooks

WikiBooks has over 3,000 textbooks that anyone can edit. **Topics** cover many areas relevant for VET, e.g. computing, engineering, humanities, languages, mathematics, science and social sciences.

WikiHow

Vast collection of instructional texts and images

4.5 Video

See also article **Web 2.0 Tools: Video Sharing** that sheds light on creating and sharing video as OER. It is written particularly vocational education and training in mind.

Videvo

Videvo has a nice collection of free stock video footage and motion graphics for use in your own projects. CC BY and royalty-free. Not always clear what is what. Has also a collection of commercial, copyrighted Shutterstock videos which may confuse users. Pay also attention to the versatila license arrangements. For example, a video may be free to download if you credit the author but reguires a if you want you use it without crediting the author. Read more on their FAQ.

Vimeo

Vimeo is very similar to Youtube but it supports OER better. It has one of the largest collection of CC licensed videos and make finding these easy.

Youtube

Youtube has the biggest selection of videos and music online. Only a fraction of the content is shared under CC BY license.

4.6 Course material and learning modules: English and/ or multi-lingual sites

Repositories of training and educational materials offer a range of resources developed by many different organisations and individuals and for different subjects, age groups, purposes.

The repositories are mainly focused on general and/or higher education. However, there are many modules and courses that fit the VET goals as well. The three pages in the beginning of the list are such that have a VET/TVET point of view.

This list is alphabetical, except that from the European point of view and in the VET context we see useful to have four sites mentioned before others.

CEDEFOP

CEDEFOP (the European Centre for the Development of Vocational Training) has publications and resources for VET, e.g. VET toolkit for tackling early leaving or Resources for guidance.

Open Educational Resources in TVET

On this page you find a commented list of platforms and services that provide or give access to openly licensed content for Technical and Vocational Education and Training.

School Education Gateway

Presented in 23 European languages, the School Education Gateway by European Commission is a single point of entry for teachers, school leaders, policy makers, experts and other professionals in the school education field. It replaces Open Education Europa that many may be familiar with. Not all content has been migrated to School Education Gateway yet. General and VET/TVET education resources, also pedagogic support material.

WBL-Toolkit

Work-based Learning Toolkit by BIBB, Germany, is a collection of resources (guides, methods, best practices etc.) particularly useful for VET. Materials are free for non-commercial use as long as WBL-Toolkit and original author are attributed. Many resources are available in several languages.

Curriki

Curriki is a community for teaching or studying: Create, share, and explore high quality K-12 content, mostly in English. Has a plenty of VET/TVET learning modules and courses.Curriki let's users upload educational resources, and provide ratings and comments.

Khan Academy

Khan Academy offers practice exercises, instructional videos, and a personalized learning dashboard that empower learners to study at their own pace in and outside of the classroom. They tackle math, science, computer programming, history, art history, economics, and more. The Adult Learner section has resources suitable for VET/TVET, e.g. on entrepreneurship.

MERLOT

MERLOT (Multimedia Educational Resources for Learning and Online Teaching) is provided by the California State University Center for Distributed Learning. Some of the material is open, some is copyrighted.

MIT Open Courseware

MIT Open Courseware provides access to MIT course material. It also has educational resources for K-12. See section **Highlighs for High School** for MIT OpenCourseWare materials that are most useful for high school students and teachers.

OERCommons

OER Commons is a public digital library of open educational resources. Explore, create, and collaborate with educators around the world to improve curriculum. It organises materials by subject, type of object (course, module, lesson plan, etc.), media type and intended audience. It allows users to rate and comment on the resources. Licensing details are easy to find. From 2018 on, it is possible to create an own course hub on to their platform.

Open Education Consortium

CCCOER is a growing consortium of community and technical colleges committed to expanding access to education and increasing student success through adoption of open educational policy, practices, and resources. Has an OER search engine in collaboration with MERLOT. See under "Courses" tab. To learn more about OER, see "Resources" > "Open Textbooks"

Open Education Europa

This well-known portal has been closed. Some of the content will find its way to **https://www.schooleducationgateway.eu/en/pub/index.htm** (see above)

OpenCulture

OpenCulture provides ebooks, MOOCs, business and language courses, movies etc. Unfortunately the licensing conventions vary confusingly. For example courses organized as Youtube playlists may state they are under ordinary Youtube license, not CC BY. That may be because of the "fair use" doctrine in the U.S. law that allow using much of the copyrighted content for educational purposes.

OpenLearn by Open University (UK) aims to break the barriers to education by reaching millions of learners around the world, providing free educational resources. All content is shared under CC BY-NC-SA (4.0). The sister website, **OpenLearn Create**, has been built with contributors in mind. Take our content, rework it or adapt it for your own use and then contribute it back into the OpenLearn community by placing it in OpenLearn Create.

OpenStacks CNX is a nonprofit digital ecosystem by Rice University (USA) providing educational resourses for free. Has a plenty of VET/TVET learning modules.

Wikiversity is a Wikimedia Foundation project devoted to learning resources, learning projects, and research for use in all levels, types, and styles of education from pre-school to university, including professional training and informal learning.

4.7 Course material and learning modules: local language (other than English) / national sites

FINLAND:

Ammatillisen koulutuksen verkko-oppimateriaalit
eLearning material for VET in Finnish hosted at the National Agency for Education website

Avoimet ammatilliset opinnot -palvelu
The new EU funded site groups together the open studies offered by several educational institutions on one platform and provides anyone with a flexible way of acquiring skills. In order to guarantee access for everyone regardless of their place of residence, the studies are provided as independent e-learning modules or under a teacher's supervision.

OppiminenOnline
Further professional development resources for VET teachers in pedagogy, ICT and more. Teachers and trainers can make their competence visible by applying an open badge.

ITALY:

RisorseDidattiche
eLearning material in Italian

NETHERLANDS:

KlasCement
Teachers and organizations share educational resources. Moderated on the basis of clear admission and quality criteria. It covers VET / adult education. English/Dutch. SignUp to download. In general, material is free to use for non-commerial education purposes. Licenses may vary according to material.

4.8 General info on OER and/ or ICT in VET

OERup!
The OERup! online training course aims to enable you to find, create and use Open Educational Resources (OER), and to implement Open Educational Practices (OEP) in your daily work. The training is targeted to teaching practitioners, training consultants as well as to the management of adult education institutions.

OLCOS
OLCOS, Open eLearning Content Observatory Services site is a bit outdated but e.g. the Tutorials section has useful documents for planning the use of OER.

Using ICTs and Blended Learning in Transforming TVET
Case studies on TVET by the Commonwealth of Learning

Wikieducator OER Handbook
(educators, institutions, policy makers)

4.9 OER online tools and software

In order to remix or create OER there is a wide variety of open source software. That area is not in the scope of the guidebook at hand. Instead, please see 'Web 2.0 Tools Guidebook' by IV4J to learn their educational use on the IV4J Website Resources page.

There are hundreds of good lists consisting of free and other online tools for educators. Here is a short selection, reviewed in May 2018:

http://oedb.org/ilibrarian/101-web-20-teaching-tools/
https://teach.com/what/teachers-know/teach100/
http://subjectguides.esc.edu/OER/oerauthoringtools
https://elearningindustry.com/12-tools-for-digital-classrooms
https://blog.ed.ted.com/2015/09/19/25-awesome-apps-for-teachers-recommended-by-teachers/

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Cox, G. & Trotter, H. (2017). An OER framework, heuristic and lens: Tools for understanding lecturers' adoption of OER. Open Praxis, 9(2). **https://doi.org/10.5944/openpraxis.9.2.571**

Latchem, C. (2017). Using ICTs and Blended Learning in Transforming TVET. UNESCO, Paris and Commonwealth of Learning, Burnaby. http://oasis.col.org/bitstream/handle/11599/2718/2017_Latchem_Using-ICTs-and-Blended-Learning.pdf

Marope, P. T. M., Chakroun, B., & Holmes, K. P. (2015). Unleashing the potential: Transforming technical and vocational education and training. UNESCO, Paris. http://unesdoc.unesco.org/images/0023/002330/233030e.pdf

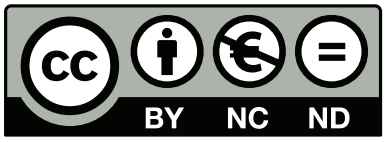
OECD (2007): Giving Knowledge for Free: The Emergence of Open Educational Resources. http://www.oecd.org/education/ceri/38654317.pdf

Põldoja, H. (2016). The Structure and Components for the Open Education Ecosystem: Constructive Design Research of Online Learning Tools. Aalto University, Helsinki. **https://aaltodoc.aalto.fi/bitstream/handle/123456789/23535/isbn9789526069937.pdf**

Schuwer, R. & Janssen, B. (2018). Technical Vocational Education and Training: the 'dark continent' in OER. **https://repository.tudelft.nl/islandora/object/uuid:9c018fa0-7e8e-4d1a-8a8e-3fbdf6ef4318**

UNESCO (2017): 2017 Ljubljana OER Action Plan. **https://en.unesco.org/news/ljubljana-oer-action-plan-2017-adopted-support-quality-open-educational-resources**

UNESCO (2015): Revision of the 2011 Revised recommendation concerning TVET. UN Head Quarter, General Conference. UNESCO, Paris. http://www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&filt=all&id=474



Erasmus+ IV4J „Innovation in VET for Jobs and Employment“
Project 2016-1-DE02-KA202-003271 NA BiBB Germany, FA-Magdeburg GmbH, Schönebecker Str. 119, 39104 Magdeburg