OpenDigCompEdu

Open Digital Competences Training for School Educators (OpenDigCompEdu)

(2021-1-ES01-KA220-SCH-000027770)

Course: C4. Open Digital Education Eco-system

English translated version

Open Digital Competences Training for School Educators (OpenDigCompEdu): Open Digital Competences for Educators courses

Course Title: C4. Open Digital Education Eco-system	
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Commented [1]: The Copyright Licence has changed as discussed and agreed during our TPM in Athens.

Open Digital Education Eco-system: *Module 1* Opening Up Education

Welcome

Welcome to the Opening Up Education course, where you will learn about the Open Pedagogy, and its legal and technical considerations.

Announcements (forum)

General news and announcements from the course facilitators.

About this course (book)

Before you begin, review the Course overview, Learning outcomes, Course structure and Completion and assessment information.

Course overview

Aim

In this course you will:

- Explore the concept and attributes of Open Pedagogy
- Identify the characteristics of renewable assignments through examples of open pedagogy in action
- Inspect the legal and technical barriers to openness
- Recognise the role of accessibility in open education
- Learn the steps to formulate an OER adoption strategy in school practice

Format

This is a self-paced course without active moderation. You are encouraged to discuss ideas in the discussion forums and respond to other learners' queries.

Learning time

The estimated learning time to complete this course is 8 hours.

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Learning outcomes

By the end of this course, you will be able to:

Describe the forms of Open Education, as well as the core and transversal dimensions of openness and formulate an OER adoption strategy in school practice.

More specifically you will be able to:

- **describe** the the forms of Open Education, as well as the core and transversal dimensions of openness
- **list** the attributes of open pedagogy
- **design** a renewable assignment embarrassing the characteristics of open education
- **identify** the merits and challenges of using OER
- **identify** technical barriers to openness
- **discuss** the accessibility dimension of openness
- **formulate** an OER adoption strategy in school practice

Course structure

Welcome
Find out how the course works, check your prior understanding and join in an optional general discussion.

Review, learn and practice
- Review the "Tutorial: Opening Up Education" reading all the sections.
- Browse the "Tasks: Opening Up Education", and try the suggested tasks to extend your skills.
- Complete the "Checklist: Opening Up Education", confirming your understanding.

Course check
Test your understanding in the final quiz.

Digital competences

This course relates to the following competence(s):

1.2 Professional collaboration

1.3 Reflective practice

4.1 Assessment strategies

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Completion and assessment

To complete the course you need to complete the following activities:

- View the '<u>About this course</u>' book.

- Complete the '<u>Course pre-check: What do you already know?</u>'.

- View the '<u>Tutorial: Opening Up Education</u>', reading all sections.

- View the '<u>Tasks: Opening Up Education</u>', trying out the suggestions.

- Complete the '<u>Checklist: Opening Up Education</u>', confirming your understanding.

- Achieve 80% or more in the '<u>Opening Up Education: Check your understanding</u>' quiz.

Completing the activities

- Some activities are automatically marked as completed based on specific criteria.
- Some activities require you to manually mark them as done.

Make sure you complete the activities according to their completion conditions.

Course badge

Upon successful completion of this course you will be automatically awarded with a badge to showcase the skills and knowledge you have obtained.

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Next steps and Certificate

If you complete this course successfully, why not take our other courses in the Open Digital Education Eco-system and be awarded ~~optionally purchase~~ the **Open Digital Education Eco-system Open Certificate**?

<u>Open Licenses (Creative Commons Licenses)</u>

- Recognise and apply open licenses.

<u>Open Content (Open Educational Resources)</u>

Commented [2]: This needs to be updated in the English Version

- Be able to use, develop and evaluate open content in school practice.

[Open Technology](#)

- Be able to select and describe open technology solutions in the school context.

[Open Data in Education](#)

- Be able to assess the benefits of open data in teaching and learning and integrate open educational data in school practice to achieve impact.
- Understand the significance of informed consent and educational data protection policies as key Ethical Principles.

ODCE Greek – National Case Studies

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Credits

Many thanks to the following individuals who contributed to this course, whether it be providing content and instructions, or providing feedback to help improve the design of this course.

- Sofia Mougiakou, University of Piraeus Research Centre (UPRC), Greece;
- Dimitra Vinatsella, University of Piraeus Research Centre (UPRC), Greece;
- Demetrios G. Sampson, University of Piraeus Research Centre (UPRC), Greece.

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Licence

This course, developed within the frame of EU project "[Open Digital Competences Training for School Educators](#)", project id 2021-1-ES01-KA220-SCH-000027770 Launched in Spring 2024, by Sofia Mougiakou, Dimitra Vinatsella, Demetrios G. Sampson (University of Piraeus Research Centre - UPRC), Greece and Moodle Academy (Moodle Pty Ltd) is licensed under [CC BY-NC-SA 4.0](#). Original resources available at [Moodle Academy](#).

› [Read more about how you should attribute this work](#)

[End of Book]

General discussion forum (forum)

Course pre-check: What do you already know? (quiz)

A quiz for testing learners' prior knowledge.

You can take it as often as you like. It will not affect your final grade.

1. **T**/F: Open Educational Resources (OER) are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits repurposing by others.

2. The most commonly used intellectual property license for OER that permits free use and re-purposing is called:

   - Public Domain

   - **Creative Commons**

   - Traditional Copyright

   - Open Copyright

3. Which of the following are examples of Open Pedagogy? (Select all that apply)

   - **Students as Question Bank Authors: As part of a course using an open textbook, students are adding questions to a shared question bank.**

   - **Students as OER Adapters: Students adapting an existing open textbook to create a new version tailored to their needs.**

   - A flipped classroom: Students complete readings at home and work on live problem-solving during class time.

4. T/**F**: Making accessible teaching and learning resources is only about making educational resources for people with disabilities.

5. **T**/F: **Renewable assignments**, are defined as tasks in which students compile and openly publish their work so that the assignment outcome is inherently valuable to the community.

Review, learn and practice

Tutorial: Opening Up Education

1. **Focus for this tutorial**

In this tutorial we explore:

- the OpenEdu framework

- Open pedagogy

- Barriers to Openness

- Open Education and Accessibility

- UNESCO's Guidelines on the development of open educational resources policies

2. **Intro to Open Education**

Open education can take several forms. Paul Stacey (2018) imagined open education as a growing tree from which major established and growing components of the open landscape hang, including:

- Open Source Software and Open Source Hardware

- Open Galleries, Libraries, Archives, and Museums

- Open Science

- Open Access

- Open Data

- Open Government

- Open Policy, and finally

- Open Educational Resources

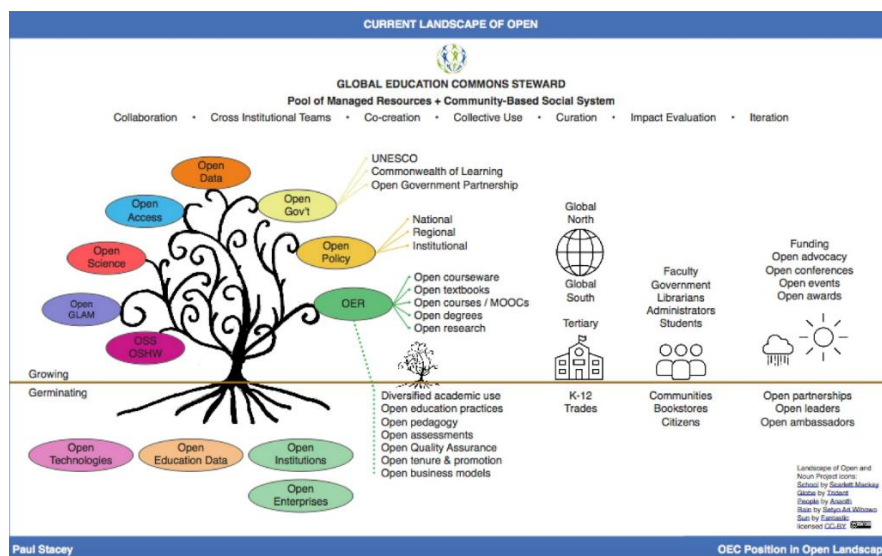**Image 1 Current Landscape of Open**

Image: [Current Landscape of Open](#) by Paul Stacey licensed under CC-BY

Source: https://edtechfrontier.com/2018/02/08/starting-anew-in-the-landscape-of-open/

Additional material:

You can watch Paul Stacey's Keynote presentation "[Why Open Matters](#)" in MoodleMoot USA 2018.

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3. Dimensions of Openness

Inamorato dos Santos et. al (2016) designed the OpenEdu framework, a support framework for opening up education aiming to lower the barriers to education at many different levels (e.g. access, cost, technology, pedagogy). Within the OpenEdu study, open education is seen as:

> *"a way of carrying out education, often using digital technologies. Its aim is to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customisable for all. It offers multiple ways of teaching and learning, building and sharing knowledge. It also provides a variety of access routes to formal and non-formal education, and connects the two."*

Through open education each and every individual, at every stage in their lives and career development, can have appropriate and meaningful educational opportunities available to them. These include access to content, courses, support, assessment and certification in ways that are flexible and accommodate diverse needs. Barriers, for example, those related to entry and cost, are reduced or eliminated.

The framework describes the 10 dimensions of open education.

The 6 core dimensions of open education are most commonly found in the practices around open education. They provide the 'what' of opening up education: i.e. access, content, pedagogy, recognition, collaboration and research.

On the other hand, the 4 transversal dimensions of open education provide the backbone for the realisation of the core dimensions - the 'how' of opening up educational practices, i.e. quality, technology, strategy and leadership.

Image 2 The OpenEdu Framework

Image: The OpenEdu Framework

([Inamorato dos Santos et. al, 2016](#))

For each dimension, the framework presents a definition of the dimension, a rationale for it, its main components and its descriptors. These descriptors show detailed actions that can be performed by HE institutions to achieve or maintain the level of openness desired in each dimension.

Additional material:

Report - Opening up Education: a support framework for higher education institutions.

4. **Opening Up Education: The OpenEdu framework**

In the following video, Dr Andreia Inamorato introduces the European Commission's OpenEdu Framework, which is a tool to support education institutions to open up education, developed by the Joint Research Centre on behalf of the Directorate General Education and Culture.

The framework presents 10 dimensions for opennesses: access, content, pedagogy, recognition, collaboration and research (core dimensions) and technology, strategy, leadership and quality (transversal dimensions).

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 1 Opening up Education: The OpenEdu Framework

Video: Opening up Education: The OpenEdu Framework [10:14]
https://www.youtube.com/watch?v=KhFeaFD5PJw

Opening up Education: The OpenEdu Framework by Andreia Inamorato is licensed under Creative Commons Attribution license (reuse allowed)

5. **Quick check**

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. **T**/F : The OpenEdu framework consists of 10 dimensions - 6 core dimensions that provide the 'what' of opening up education and 4 transversal dimensions that provide the 'how'.

2. T/**F**: Quality is a core dimension of openness

3. As per Opening Up Education report, RPL (Recognition of Prior Learning) is one of the components of the core dimension:

   - Pedagogy

   - Assessment

   - **Recognition**

   - Technology

6. **Open pedagogy**

The Open Pedagogy Notebook (DeRosa & Jhangiani, 2019) describes **open pedagogy** as "a site of praxis, a place where theories about learning, teaching, technology, and social justice enter into a conversation with each other and inform the development of educational practices and structures."

Moreover, Open Pedagogy is seen as "an access-oriented commitment to learner-driven education AND as a process of designing architectures and using tools for learning that enable students to shape the public knowledge commons of which they are a part."

In the following video, Robin DeRosa gives a short intro to OER, Open Access, and Open Pedagogy.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 2 Intro to Open Education

Video: [Intro to Open Education](#) [7:21]

https://www.youtube.com/watch?v=Bd-GAFCHwKc

[Intro to Open Education](#) by [PSU Open](#) is licensed under [Creative Commons Attribution license (reuse allowed)](#)

7. Attributes of Open Pedagogy

[Hegarty (2015)](#) describes eight attributes of open pedagogy:

- **participatory technologies:** socially constructed media such as blogs, wikis and other 'sharing' social media;

- **people, openness and trust:** students' willingness to learn is fragile, with participation and interactions unlikely to flourish unless an element of trust can be built (Mak et. al., 2010);

- **innovation and creativity:** finding new models of teaching and learning that better exploit OER and more emphasis on choosing digital technologies and methods that encourage the sharing of knowledge and resources;

- **sharing ideas and resources**: an open pedagogy needs peers to share willingly within a connected and trusting and professional community;

- **connected community**: a technologically linked community with common interests;

- **learner-generated**: this requires 'opening up' the process to empower students to take the lead, solve problems, and work collectively to produce artifacts that they share, discuss, reconfigure, and redeploy

- **reflective practice**: when students and teachers collaborate in partnerships, it facilitates deeper pedagogical reflection

- **peer review**: Conole (2014) sees learners as publishers and users of a range of open tools, with peer interactions and critique embedded in the learning experience.

Hegarty also makes the point that it is almost impossible to separate the components of an open pedagogy into neat, segregated dimensions. Components in each of the eight dimensions overlap in many ways.

Watch the following video entitled 8 Attributes of Open Pedagogy - Hegarty (2015).

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 3 8 Attributes of Open Pedagogy - Hegarty (2015)

Video: 8 Attributes of Open Pedagogy - Hegarty (2015) [3:47]

This video is created by UPRC and is adapted from Attributes of Open Pedagogy by Bronwyn Hegarty and Open Pedagogy I: Attributes of Open Community by Dr. Levina Yuen and Open Pedagogy II: Attributes of Open Practice by Dr. Levina Yuen and it is licensed under CC BY-NC-SA 4.0.

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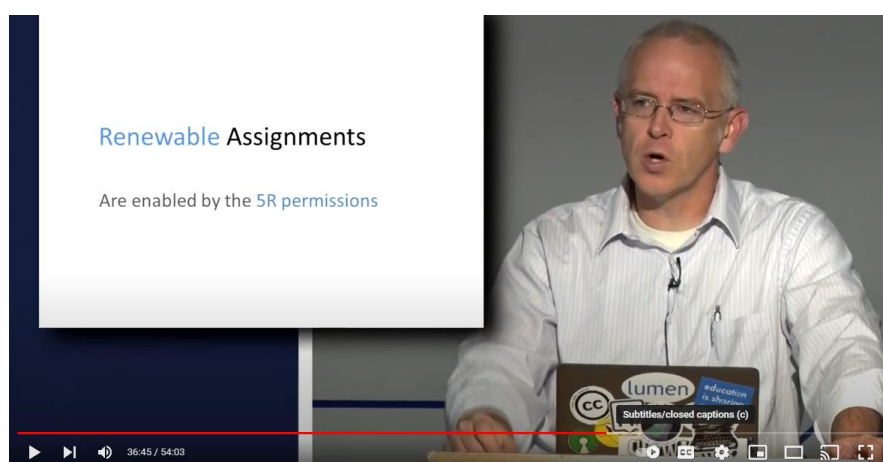
8. Examples of Open Pedagogy in action

There is a close connection between networking, and social media such as blogs and wikis, which enable students to create open educational resources, and open pedagogy.

With open pedagogy projects, students are empowered to engage in information creation through non-disposable or renewable assignments. **Renewable assignments**, as opposed to disposable assignments, are defined as tasks in which students compile and openly publish their work so that the assignment outcome is inherently valuable to the community (Chen, 2018; Wiley & Hilton, 2018). The student is both a creator and contributor of assignments that are openly licensed, allowing the content to be shared, revised, and reused by future students in a course (Van Allen & Katz, 2020).

In the video below, the chief academic officer of Lumen Learning and education fellow at Creative Commons, David Wiley describes renewable assignments, which "add value to the world, students see value in doing them, while teachers see value in grading them".

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 4 Renewable assignments

Video: Renewable assignments [13:04]

Video adapted from "[High Impact Practices for Integrating Open Educational Resources (OER) into University Courses](#)" by David Wiley, Lumen Learning, licensed under [CC BY 4.0](#).

Examples of Open Pedagogy in action may include (Elder, 2019; DeRosa & Jhangiani, 2019; McClean, 2017):

Students as Textbook Contributors, like the "[Open Anthropology of the earlier American Lit](#)" project, where Robin DeRosa collaborates with students in an American literature survey course to create an open anthology of public domain literature to replace a commercial text.

Students as OER Adapters, like "[The Power of Open Educational Resources](#)" project from David Wiley, where students adapted an existing open textbook to create a new version tailored for instructional designers.

Students as Question Bank Authors, like the "[Principles of Social Psychology](#)" project from Rajiv Jhangiani, where students write multiple-choice questions in a social psychology course that uses an open textbook for which there is no associated question bank.

Students as Wikipedia Contributors, like the "[Murder, Madness and Mayhem](#)" project, where undergraduate students in a Spanish course edited and created Wikipedia articles with the goal of increasing the number of "featured articles" on the course's topic, Latin American literature.

Additional material:

You can find more about open pedagogy and renewable assignments at [Open Pedagogy of Iowa State University](#) and [Open Pedagogy by Rebus Community](#).

Examples adapted from the [Introduction to Open Pedagogy](#) from University of Texas Arlington, licensed under a [CC-BY-NC 4.0](#) International License.

9. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. Open pedagogy (select all that apply)

- **is not just about access to knowledge; it's also about access to knowledge creation**

- **is about supporting assignments that put our students in conversation with their community**

- uses authentic student-led real-world research that includes critical reflection and connections made to course concepts and course resources submitted to the teacher as a final assignment

2. **T**/F: Tools such as blogs, wikis, and platforms for sharing and collaboration allow for the implementation of the first characteristic of open pedagogy, which is the use of technologies that encourage participation.

10. Barriers to openness

Image 3 Barriers to Openness

Image: Barriers to Openness by Sofia Mougiakou via mooc.ola-project.eu is licenced under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License

The two most important aspects of openness, as per Hylén (2000), have to do with free availability over the Internet and as few restrictions as possible on the use of the resource. There should be **no technical barriers** (undisclosed source code), no price barriers (subscriptions, licensing fees, pay-per-view fees) and **as few legal permission barriers as possible** (copyright and licensing restrictions) for the end-user. The end-user should be able not only to use or read the resource but also to adapt it, build upon it and thereby reuse it, given that the original creator is attributed for her work.

Downes (2006) argues that "*resources which require some sort of payment by the user – whether that payment be subscription fees, contribution in kind, or even something simple, such as user registration, should not be called 'open'. Even when the cost is low – or 'affordable' – the payment represents some sort of opportunity cost on the part of the user, an exchange rather than sharing.*"

11. Legal and price barriers to openness

In the video below the chief academic officer of Lumen Learning and education fellow at Creative Commons, David Wiley, discusses the legal and price barriers to openness, describes Open Educational Resources (OERs), explains the 5Rs of OER (Retain, Reuse, Revise, Remix, and Redistribute) and helps us distinguish OERs from other free resources.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 5 High Impact Practices for Integrating Open Educational Resources (OER) into University Courses
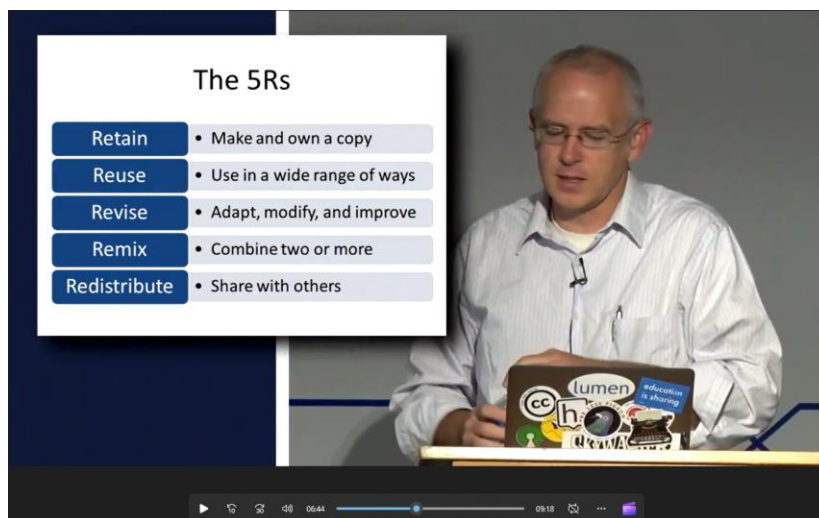
Video: High Impact Practices for Integrating Open Educational Resources (OER) into University Courses [16:02]

Video adapted from High Impact Practices for Integrating Open Educational Resources (OER) into University Courses by UB Curriculum, Assessment, Teaching Transformation licensed under Creative Commons Attribution license (reuse allowed)

12. Technical barriers to openness

While open licenses provide users with legal permission to engage in the 5R activities, many open content publishers make technical choices that interfere with a user's ability to engage in those same activities. The ALMS Framework provides a way of thinking about those technical choices and understanding the degree to which they enable or impede a user's ability to engage in the 5R activities permitted by open licenses (Wiley, 2021).

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 6 The ALMS framework

Technical Barriers to Openness

A. L. M. S.

Video: The ALMS framework [2:23]

This material is an adaptation of Defining the "Open" in Open Content and Open Educational Resources, originally written by David Wiley and published freely under a Creative Commons Attribution 4.0 license at https://edtechbooks.org/open_education/defining_the_open.

13. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. T/**F**: All material available on the internet that can be located and obtained without cost is considered open.

2. You found an OER textbook that would be great for your course, but it's only available in a PDF. There isn't any freely available software that will let you make direct changes to this OER. Which of the four ALMS areas of technical openness would this consideration fit within?

   [Question adapted from [UH OER Training](#) originally written by William Meinke and published under a [CC BY 4.0 International License](#)].

   - Meaningfully editable

   - **Access to editing tools**

   - Level of expertise required

   - Self-sourced

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14. Open Education and Accessibility

The open education movement has helped people access content that they would otherwise not be able to view or interact with. Open education resources reduce costs for students and allow for greater flexibility for instructors (Sasagawa, 2017).

In the video below, Tara Robertson, the accessibility librarian at the [Centre for Accessible Post-Secondary Education Resources](#) (CAPER-BC), discusses how the idea of accessibility can help push the open education movement even further forward.

The transcript and MP4 file may be downloaded from the folders: [Videos for download](#) and [Transcripts for download](#).

Video 7 Open Dialogues: Open education and accessibility
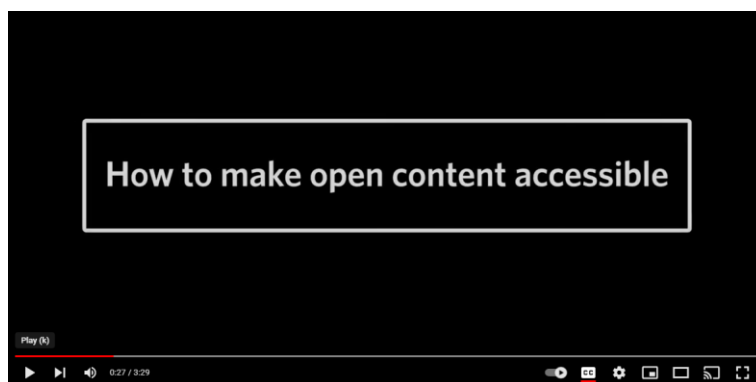
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Video: [Open Dialogues: Open education and accessibility](#) [3:29]

https://www.youtube.com/watch?v=KcvYG-rkO-Y

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15. Open Education Policies

The next video briefly introduces the "Guidelines on the development of open educational resources policies" published in 2019 by UNESCO and the Commonwealth of Learning (Miao et al., 2019). The two organizations share the conviction that OER can make a significant contribution to achieving SDG 4 for Education 2030.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 8 Guidelines on the development of open educational resources policies

Video: Guidelines on the development of open educational resources policies (UNESCO & COL, 2019) [3:39]

This video is adapted from the "Guidelines on the development of open educational resources policies" originally published by UNESCO and the Commonwealth of Learning (COL) under CC-BY-SA 4.0

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16. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. T/**F** : In the "[Guidelines on the development of open educational resources policies](#)", UNESCO and the Commonwealth of Learning (COL) describe the whole process for designing and implementing OER policy in eight phases.

2. Improving accessibility allows better access for everyone. For example, adding alt text to images can help (select all that apply)

   - **people with low vision using screen readers**

   - people who don't speak the same language

   - people watching videos in loud places

   - **people with bad internet connection**

   - students using tablets in classroom

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Tasks: Opening Up Education

Try these tasks to extend your Opening Up Education skills:

1. Identify the **benefits** of Open Education and the **challenges** of using OER. You may find useful information in <u>Understanding Open Educational Resources</u>.

2. Design a **renewable assignment** for your classroom so that your learners' work will have the potential for broader impact and value to others. You may find useful information in <u>Evolving Into the Open: A Framework for the Collaborative Design of Renewable Assignments</u> (Van Allen & Katz, 2020).

3. Chapter 5 in the "<u>Guidelines on the development of open educational resources policies</u>" by UNESCO & COL presents the main building blocks that an OER policy should cover. You are asked to fill in the summary view of the **OER masterplan** table with localized objectives, indicators, activities and actors.

Key building blocks	*What is the aim?* Objectives	*What is to be done?* Activities	*Who is involved?* Actors	*How will success be monitored?* Indicators
Adopting an open licensing framework				
Ensuring integration of OER at the level of curriculum development				
Ensuring development, storage and				

accessibility of OER			
Aligning quality assurance procedures			
Supporting capacity building and awareness raising			
Encouraging sustainable business models and launching funding strategies			
Funding research on the effectiveness of OER use and learning outcomes			
Setting up a governing body to			

implement OER policy				

Checklist: Opening Up Education

When you feel you understand the following aspects of Opening Up Education, select 'I can do these'.

- I can describe the forms of Open Education, as well as the core and transversal dimensions of openness as presented in the OpenEdu Framework

- I can list the Eight attributes of Open Pedagogy

- I can recognise the characteristics of a renewable assessment

- I can identify the merits and challenges of using OER

- I can identify technical barriers to openness

- I can discuss the accessibility dimension of openness

- I can follow the Guidelines on the development of open educational resources policies" by UNESCO & COL to work through key steps necessary for formulating a comprehensive OER adoption strategy in school practice

  ○ **I can do this**

Opening Up Education: Check your understanding (quiz - 10 MCQs)

This quiz will help you to consolidate everything you learnt on this course.

You can take the quiz as often as you like, but you must achieve a minimum 80% pass grade.

Upon completion you will receive a Moodle Academy badge.

Q1: T/F: As per [Opening Up Education report](), core dimension 2 - Content, includes "Free-of-charge content" referring to content that is 'gratis' but remains copyrighted. The user does not pay to access it, but at the same time cannot reuse, adapt, or share it without seeking permission from the copyright holder.

Q2: The 5Rs of OER stand for

- **Retain, Reuse, Revise, Remix, and Redistribute**

- Retain, Reuse, Release, Remix, and Redistribute

- Regain, Reuse, Revise, Remix, and Redistribute

- Retain, Reuse, Reduce, Remix, and Redistribute

Q3: Improving accessibility allows better access for everyone. For example, adding closed captions to videos can help (select all that apply)

- **people with hearing impairments**

- **people who don't speak the same language as the audio**

- **people watching videos in loud places**

- people with low vision

- people with bad internet connection

- **students using tablets without headphones in class**

Q4: In the ALMS framework which describes the technical barriers to openness, "L" stands for "the Level of expertise required to revise or remix the content of an OER". Choose the appropriate example for this criterion

- A scanned image of a handwritten document that is very difficult to revise

- An animated model that needs an expensive tool to revise like 3DS max

- **An open 3D animation that needs Blender (free 3D animation tool) to revise.**

Q5: You found an OER course website that is wonderful. The site has lots of great information but the content is not directly downloadable and copy-and-pasting from the site has been disabled. Which of the four ALMS areas of technical openness would this consideration fit within?

- **Meaningfully editable**

- Access to editing tools

- Level of expertise required

- Self-sourced

  Adapted from UH OER Training by William Meinke licensed under a Creative Commons Attribution 4.0 International License

Q6: As per Opening Up Education report the components of **core dimension 1 - Access**, are:

- Open Access, Open Research Collaboration, Open Data, and Citizens' Science

- **Cost, Accessibility, Flexible learning, Lower entrance requirements for courses and programmes, and People**

- Open educational resources (OER), and free of charge content

Q7: T/F: In the Open Pedagogy Notebook, DeRosa & Jhangiani (2019) suggest paying special attention to the barriers, challenges, and problems that emerge through the use of technology to avoid creating inequities.

Q8: Bronwyn Hegarty (2015) analyzed the Attributes of Open Pedagogy. Select the attributes that are **not** included in Hegarty's list, from the attributes below:

- Peer review

- Connected Community

- **Sustainability**

- Reflective Practice

- Innovation and Creativity
- **Gender equality**

Q9: In an English course students are studying *A Tale of Two Cities*. Students are asked to produce written or video-based presentations that summarize key historical context or important aspects of the storyline. Such summaries could include identifying symbolism or making connections between events of the book and contemporary society. Students' work will be published on the school's website.

According to the [four-part test by Wiley and Hilton's (2018)](), how would you categorize the above assignment?

- Disposable
- Authentic
- **Constructive**
- Renewable

Adapted from [Defining OER-Enabled Pedagogy]() by David Wiley and John Hilton licensed under a [Creative Commons Attribution 4.0 International License]().

Q10: T/**F:** In the ["High Impact Practices for Integrating Open Educational Resources (OER) into University Courses"]() video, David Wiley argues that in the case of Open Educational Resources open is essentially a synonym for free.

Feedback

Provide feedback

Please answer these short questions. They should take only a few minutes to complete.

Videos and transcripts for download

Videos for download

- **8 Attributes of Open Pedagogy - Hegarty (2015)** [3:47] ***NEW OER***
  https://www.youtube.com/watch?v=_wBlKQVUUNs

- **ALMS framework** [2:23] *** NEW OER ***

- **Guidelines on the development of open educational resources policies
  (UNESCO & COL, 2019)** [3:39] ***NEW OER***
  https://www.youtube.com/watch?v=VDS7s_GAlto

- **High Impact Practices for Integrating Open Educational Resources (OER) into
  University Courses** [16:02]

- **Intro to Open Education** [7:21] **https://www.youtube.com/watch?v=Bd-
  GAFCHwKc**

- **Open Dialogues: Open education and accessibility** [3:29]
  https://www.youtube.com/watch?v=KcvYG-rkO-Y

- **Opening up Education: The OpenEdu Framework** [10:14]
  https://www.youtube.com/watch?v=KhFeaFD5PJw

- **Renewable assignments** [13:04]

Transcripts for download

- **8 Attributes of Open Pedagogy - Hegarty (2015) Video Transcript**

- **ALMS framework Video transcript**

- **Guidelines on the development of open educational resources policies
  (UNESCO & COL, 2019 Video Transcript**

- **High Impact Practices for Integrating Open Educational Resources (OER) into
  University Courses Video Transcript**

- **Intro to Open Education Video Transcript**

- **Open Dialogues: Open education and accessibility Video Transcript**

- **Opening up Education: The OpenEdu Framework Video Transcript**

- **Renewable Assignments Video Transcript**

Open Digital Education Eco-system: *Module 2* Open Licenses (Creative Commons Licenses)

Welcome

Welcome to the Open Licenses course, where you will learn about the Creative Commons Licenses.

Announcements (forum)

General news and announcements from the course facilitators.

About this course (book)

Before you begin, review the Course overview, Learning outcomes, Course structure and Completion and assessment information.

Course overview

Aim

In this course you will:

- Examine the concept of Creative Commons licenses and their purpose
- Recognise the different types of Creative Commons licenses
- Learn how to apply Creative Commons licenses to one's own creative work
- Learn how to share one's own creative work with an open license
- Learn how to search for open licensed content
- Learn how toselect open licensed content with respect to the terms of the Creative Commons licences
- Learn how to attribute an openly licensed work (use and remix)

Format

This is a self-paced course without active moderation. You are encouraged to discuss ideas in the discussion forums and respond to other learners' queries.

Learning time

The estimated learning time to complete this course is 7 hours.

Learning outcomes

By the end of this course, you will be able to:

Recognise and apply open licenses.

More specifically you will be able to:

- **explain** the concept of copyright and Creative Commons licenses and their purpose
- **distinguish** between the different types of Creative Commons licences
- **apply** Creative Commons licenses to one's own creative work
- **share** one's own work with an open license
- **find** open licensed content
- **select** open licensed content with respect to the terms of the Creative Commons licences
- properly **attribute** an openly licensed work (use and remix)

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Course structure

Welcome

Find out how the course works, check your prior understanding and join in an optional general discussion.

Review, learn and practice
- Review the "Tutorial: Open Licenses" reading all the sections.
- Browse the "Tasks: Open Licenses", and try the suggested tasks to extend your skills.
- Complete the "Checklist: Open Licenses", confirming your understanding.

Course check

Test your understanding in the final quiz.

<Next page>

Digital competences

This course relates to the following competence(s):

2.1 Selecting

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Completion and assessment

To complete the course you need to complete the following activities:

- View 'About this course' book.

- Complete the ' Course pre-check: What do you already know?'.

- View the 'Tutorial: Open Licenses (Creative Commons Licenses)', reading all sections.

- View the 'Tasks: Open Licenses (Creative Commons Licenses)', trying out the suggestions.

- Complete the 'Checklist: Open Licenses (Creative Commons Licenses)', confirming your understanding.

- Achieve 80% or more in the 'Open Licenses (Creative Commons Licenses): Check your understanding' quiz.

Completing the activities

- Some activities are automatically marked as completed based on specific criteria. For example obtaining a pass grade in a quiz or posting in a forum.
- Other activities need to be manually marked as completed by ticking the checkbox.

Course badge

Upon successful completion of this course you will be automatically awarded with a badge to showcase the skills and knowledge you have obtained.

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Next steps and Certificate

If you complete this course successfully, why not take our other courses in the Open Digital Education Eco-system program and be awarded optionally purchase the Open Digital Education Eco-system Open Badge?

Opening Up Education

Commented [3]: This needs to be updated in the English Version

- Describe the core and transversal dimensions of openness.

- Formulate an OER adoption strategy in school practice.

[Open content (Open Educational Resources)](#)

- Be able to use, develop and evaluate open content in school practice.

[Open Technology](#)

- Be able to select and describe open technology solutions in the school context.

[Open Data in Education](#)

- Be able to assess the benefits of open data in teaching and learning and integrate open educational data in school practice to achieve impact.

- Understand the significance of informed consent and educational data protection policies as key Ethical Principles.

[ODCE Greek - National Case Studies](#)

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Credits

Many thanks to the following individuals who contributed to this course, whether it be providing content and instructions, or providing feedback to help improve the design of this course.

- Sofia Mougiakou, University of Piraeus Research Centre (UPRC), Greece;

- Dimitra Vinatsella, University of Piraeus Research Centre (UPRC), Greece;

- Demetrios G. Sampson, University of Piraeus Research Centre (UPRC), Greece.

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Licence

›

[End of Book]

General discussion forum (forum)

Course pre-check: What do you already know? (quiz)

A quiz for testing learners' prior knowledge.

You can take it as often as you like. It will not affect your final grade.

1. **When you create something like a picture, video, presentation, or essay, you become automatically the copyright holder**

   ○ **True**

   ○ False

2. **As a copyright holder, people should ask you for permission to use your work only if it is for commercial use**

   ○ True

   ○ **False**

3. **What does this icon stand for?**

   ○ Attribution

   ○ **Non Commercial purposes**

   ○ No Derivatives

   ○ Share Alike

4. **What does this icon stand for?**

   ○ Attribution

   ○ Non Commercial purposes

   ○ **No Derivatives**

   ○ Share Alike

5. **What does this icon stand for?**

- ○ Attribution
- ○ Non Commercial purposes
- ○ No Derivatives
- ○ **Share Alike**

6. **What does this icon stand for?**

- ○ **Attribution**
- ○ Non-Commercial purposes
- ○ No Derivatives
- ○ Share Alike

Review, learn and practice

Tutorial: Open Licenses (Creative Commons Licenses)

1. **Focus for this tutorial**

In this tutorial we explore:

- The creative commons movement

- The categories of licenses

- How to share a work with an open license

- How to attribute an openly licensed work (use and remix)

2. **The Creative Commons Movement**

When you create a photo, music, or video, it belongs to you and you have the copyright, giving you control over how it is used, by whom, and if it can be copied or shared. Creative Commons is a set of licenses that allow for lawful collaboration and sharing of creative works, such as copying, sharing, and remixing. It provides a way for creators to give permission for others to use their works freely. (*What is creative commons?, 2017*).

In the following video, some of the leading thinkers behind Creative Commons describe how the organization is helping "save the world from failed sharing" through free tools that enable creators to easily make their work available to the public for legal sharing and remix.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 1 A Shared Culture

Video: A Shared Culture [3:20]

https://www.youtube.com/watch?v=1DKm96Ftfko

A Shared Culture by Jesse Dylan is licensed under a **Creative Commons Attribution-Noncommercial-Share Alike** (CC BY-NC-SA) license.

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3. **What are Creative Commons Licenses?**

This video will introduce you to Creative Commons licenses, which makes copyright easier to understand.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 2 What are Creative Commons Licenses?

Video: [What are Creative Commons Licenses?](#) [1:57]

[https://www.youtube.com/watch?v=srVPLrmlBJY&t=12s](#)

[What are Creative Commons Licenses?](#) is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](#).

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4. **The spectrum of rights**

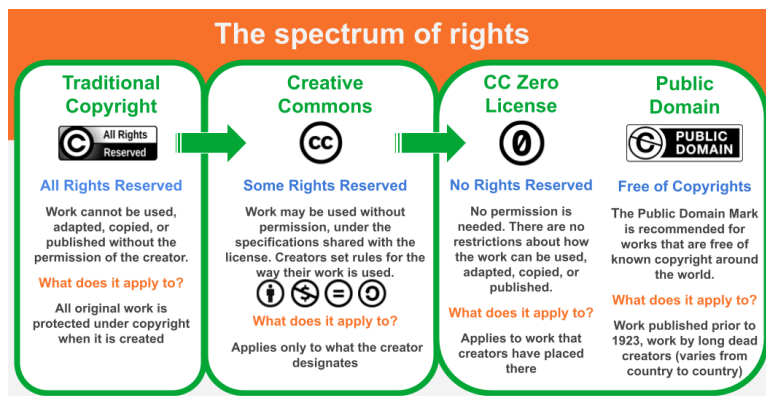**Image 1 The spectrum of rights**

Image: The spectrum of rights

Copyright in a work in Europe lasts for 70 years after the death of its longest living creator. If copyright is held by a corporation, then it lasts for 70 years after publication.

Once this temporary protection has come to its end, the work will fall into public domain (*Public domain* 2020).

Review the infographic to get an overview of the differences between

- **Traditional Copyright**,

- **Creative Commons**, and

- **CC Zero License & Public Domain**.

Reflect on your understanding pointing:

- One difference between **Traditional Copyright** and **Creative Commons License**

- One difference between **Creative Commons License** and **Public Domain**

5. **The Creative Commons License Options**

Creative Commons licenses give everyone from individual creators to large institutions a standardized way to grant the public permission to use their creative work under copyright law (*About CC licenses,* 2020). If a creator decides to attach a Creative Commons license to their work, there are six Creative Commons licenses to choose from. These six different license types are listed from most to least permissive:

CC BY: This license allows reusers to distribute, remix, adapt, and build upon the material in any medium or format, so long as attribution is given to the creator. The license allows for commercial use.

CC BY-SA: This license allows reusers to distribute, remix, adapt, and build upon the material in any medium or format, so long as attribution is given to the creator. The license allows for commercial use. If you remix, adapt or build upon the material, you must license the modified material under identical terms.

CC BY-NC: This license allows reusers to distribute, remix, adapt, and build upon the material in any medium or format for noncommercial purposes only, and only so long as attribution is given to the creator.

CC BY-NC-SA: This license allows reusers to distribute, remix, adapt, and build upon the material in any medium or format for noncommercial purposes only, and only so long as attribution is given to the creator. If you remix, adapt or build upon the material, you must license the modified material under identical terms.

CC BY-ND: This license allows reusers to copy and distribute the material in any medium or format in unadapted form only, and only so long as attribution is given to the creator. The license allows for commercial use.

CC BY-NC-ND: This license allows reusers to copy and distribute the material in any medium or format in unadapted form only, for noncommercial purposes only, and only so long as attribution is given to the creator.

The Creative Commons Public Domain Dedication

CC0 (aka CC Zero) is a public dedication tool, which allows creators to give up their copyright and put their works into the worldwide public domain. CC0 allows reusers to distribute, remix, adapt, and build upon the material in any medium or format, with no conditions.

About CC Licenses by https://creativecommons.org is distributed under a CC BY 4.0 license.

Image 2 Creative Commons Licenses overview for Students and Teachers

Image: Creative Commons Licenses overview for Students and Teachers by Kathleen Morris is licensed under CC-BY-NC-ND license

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6. **Overview of Creative Commons Licenses**

The following infographic provides an overview of the different license and their requirements:
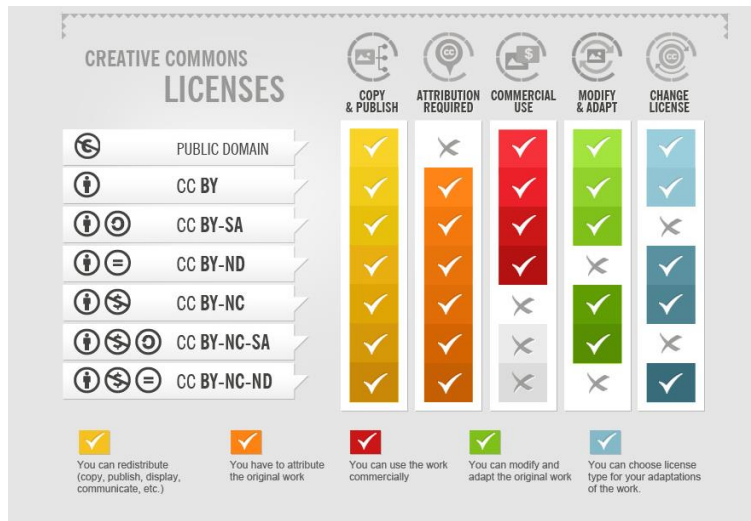
Image 3 Creative Commons license diagram

Image: Creative Commons license diagram (cropped) by Foter, CC BY-SA 3.0, via Wikimedia Commons

The purpose of Creative Commons licenses is to make more creative material available to the public, by encouraging the sharing of intellectual property for the benefit of society. To achieve this goal, the least restrictive license should be selected respecting the wishes of the content creator.

<div align="center">**<Next page>**</div>

7. **Quick check**

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. ***Determine whether the subsequent use of the CC-licensed work is acceptable or unacceptable. If it is unacceptable you are encouraged to explain why.***

   Activity adapted from
   https://maricopa.instructure.com/courses/805732/modules

   Scenario #1:

An instructor uses a photograph available online licensed under CC BY-NC-ND license. The instructor crops the image (removing about 30% of it) and includes it in a classroom presentation with appropriate attribution.

Is the subsequent use of the CC-licensed work acceptable or unacceptable?

- Acceptable

- **Not acceptable**

Feedback: Not acceptable. The image's license requires that it be changed in no way.

Scenario #2:

An educator who is creating a textbook for commercial use, includes text from a publicly accessible website, distributed under the CC BY license, in a chapter of the textbook, along with the appropriate attribution of the author, title of the work and the website source.

Is the subsequent use of the CC-licensed work acceptable or unacceptable?

- **Acceptable**

- Not acceptable

Feedback: Acceptable. The material is used in compliance with its explicit license.

Scenario #3:

An instructor downloads a digital file (.doc) containing a writing task instruction, distributed under CC BY-SA license, makes modifications and additions to it, and then distributes the new file under a CC BY-NC-SA license.

Is the subsequent use of the CC-licensed work acceptable or unacceptable?

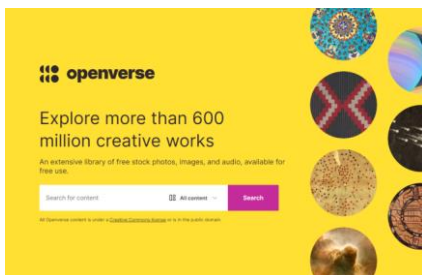- Acceptable

- **Not acceptable**

Feedback: Not acceptable. The whole purpose of "SA" ("share alike") is that any derivative work is licensed **no more strictly** than the original work.

2. You want to modify and use a work in your classroom. Which license(s) allow for this? (Select all that apply)

- ❏ **CC BY**
- ❏ **CC BY-SA**
- ❏ CC BY-ND
- ❏ **CC BY-NC-SA**
- ❏ **CC BY-NC**
- ❏ CC BY-NC-ND

8. Finding Creative Commons content

Search the Commons

The non-profit Organization Creative Commons, in addition to the licensing services, offers Openverse, a meta-search tool for finding openly licensed and public domain works, via search services provided by other independent organizations. It performs a search in more than forty open media collections, including the Wikimedia Commons, the Metropolitan Museum of Art and the Europeana.

Wikimedia commons

Wikimedia Commons is a media repository of free-to-use images, sounds, videos and other media. It is a project of the Wikimedia Foundation.
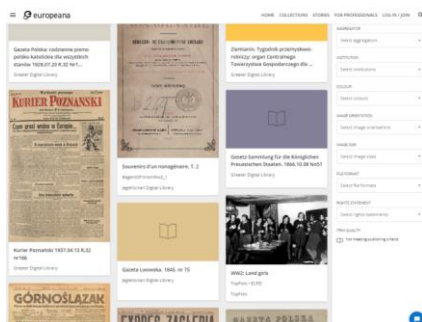
Europeana

[Europeana](#) provides digital access to European cultural heritage material, to inspire and inform fresh perspectives and open conversations about European history and culture.

Europeana gives access to millions of cultural heritage items from institutions across Europe, including artworks, books, music, and videos on art, newspapers, archaeology, fashion, science, sport, and much more.

Flickr Creative Commons

Many Flickr users have chosen to offer their work under a Creative Commons license, and you can browse or search through content under each type of license in [Flickr Creative Commons](#) .

9. Finding free-to-use images on Google

Google has ways to narrow down your results based on image usage rights.

- On your computer, go to images.google.com.

- Search for an image.

- Under the search box, click Tools.

- To narrow results to images with available license info, click Usage rights > choose a type of license. Learn about types of usage rights.

- Click the image you want.

- To find info on how to license and use the image, below the image in the right panel, click License details.

Image 4 Finding free-to-use images on Google
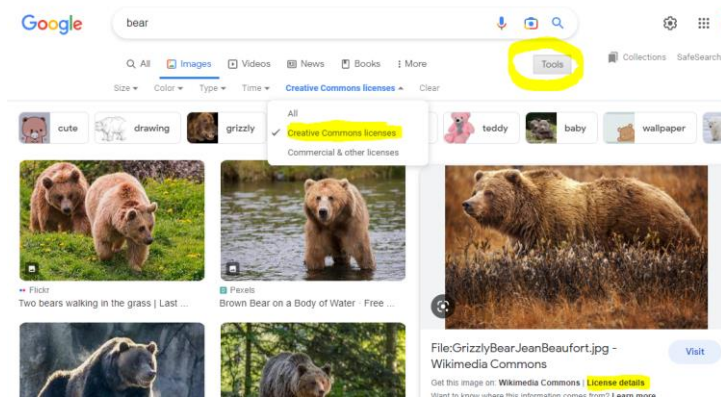
Image: Finding free-to-use images on Google xxx NEW OER xxx

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10. **Finding Creative Commons videos on youtube**

Video 3 Finding Creative Commons Videos on YouTube
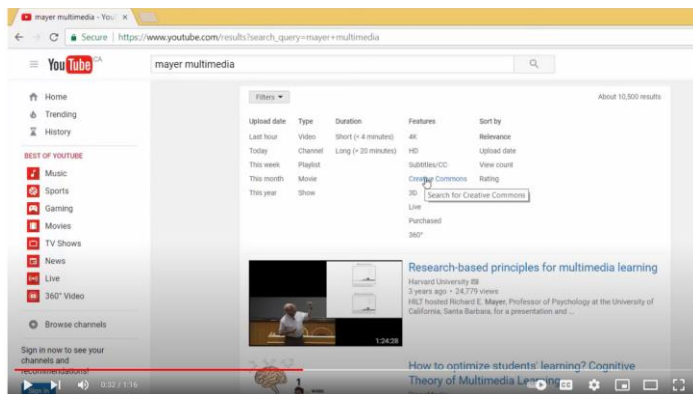
Video: Finding Creative Commons Videos on YouTube [1:16]
https://www.youtube.com/watch?v=YMBRkTTMWtw

Finding Creative Commons Videos on YouTube by **Dream Broom** is licensed under **CC-BY 4.0**
license

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11. **Using Creative Commons content with proper attribution**

You can use CC-licensed materials as long as you follow the license conditions. One condition of all CC licenses is attribution: crediting the author and giving the source information.

Whenever you reuse CC-licensed works, we recommend that the attribution include the **T**itle, **A**uthor, **S**ource, and **L**icense. This is true whether you're sharing the work as-is or if you have made an adaptation. To remember these attribution elements, it's helpful to think of the acronym: **TASL**.

Image 5: How to attribute Creative Commons Photos Infographic

Image: **How to attribute Creative Commons Photos Infographic** by **Foter**, **CC BY-SA 3.0**,

Let's now go through **TASL** — we will explain each element in more detail:

Title: What is the name of the work?

If a title was provided for the work, include it as a part of the attribution. Sometimes a title is not provided; in that case, there's no need to mention the title.

Author: Who allows you to use the work?

We often use "author" as a shorthand when we are, legally speaking, referring to the "licensor" (a.k.a., the "copyright holder" or "rightsholder"). When an author is licensing their work under a CC license and has made their name available, include the author's name as a component in your attribution.

Source: Where can people find the work?

Please make it possible for future users to find the source of the material by including a URL or hyperlink where the work resides. This often is where you found the work. If you found it somewhere other than the original site, try to include information about the original site where the work was first shared publicly.

License: How can you use the work?

You must specify which CC license was applied to the work you are reusing. Each of the six different CC licenses comes with distinct requirements for re-use. We recommend that you name and provide a link to the license.

Example

Title: Soaring towards the sky with a link to the original photo on Flickr

Author: Kandukuru Nagarjun with a link to their profile page

Source: The link to the original photo on Flickr

License: Creative Commons Attribution 4.0 International License with a link to the license deed

 Soaring towards the sky by Kandukuru Nagarjun is licensed under a Creative Commons Attribution 4.0 International License.

12. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

Mario is an Art teacher and he wants to use an image (click to follow the link) he found on flickr.com in his presentation about Michelangelo.

Help Mario make the proper attribution to acknowledge the creator of the CC work he plans to use.

1. What is the title of the resource?
   - The Sistine Chapel
   - **The creation of Adam**
   - Michaelangelo

2. Who is the author of the resource?
   - Michaelangelo
   - *Kevin Gessner*
   - Olav Bryant Smith

3. What is the license of the resource?
   - **Attribution 2.0 Generic (CC BY 2.0)**
   - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)
   - Attribution-NoDerivatives 4.0 International (CC BY-ND 4.0)

4. Select the ideal attribution for the above photo.
   - **The Creation of Adam by Kevin Gessner is licensed under Attribution 2.0 Generic CC-BY 2.0 License**
   - The Creation of Adam by Michelangelo is licensed under Attribution-NoDerivatives 4.0 International CC BY-ND 4.0
   - The Sistine Chapel by Olav Bryant Smith is licensed under Attribution-NonCommercial 4.0 International CC BY-NC 4.0

Activity adapted from the OLA course - Reusing OER by OLA project distributed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License

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13.Mark your work with a CC license

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 4 Creative Commons License Chooser Demo

Video: Creative Commons License Chooser Demo [4:54]
https://www.youtube.com/watch?v=iHDYenuFFtA
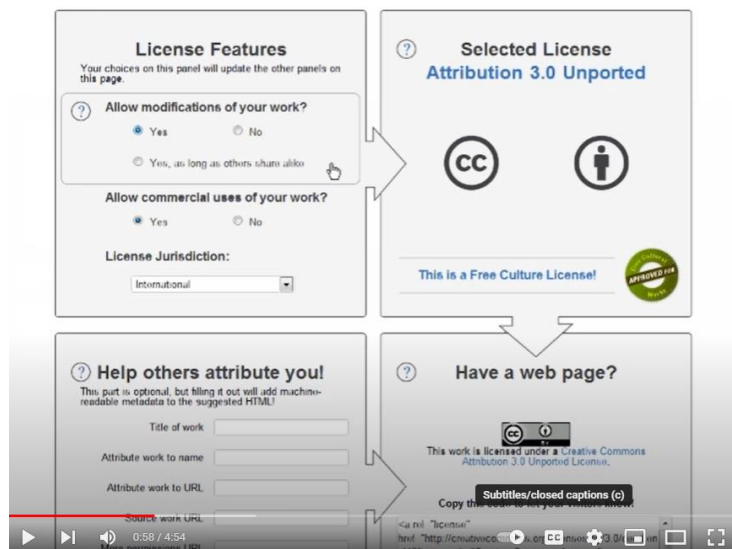
Creative Commons License Chooser Demo by Sarah Morehouse is under Creative Commons Attribution license (reuse allowed)

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14. **Add CC License to your youtube video**

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 5 Add Creative Commons License to Your YouTube Video
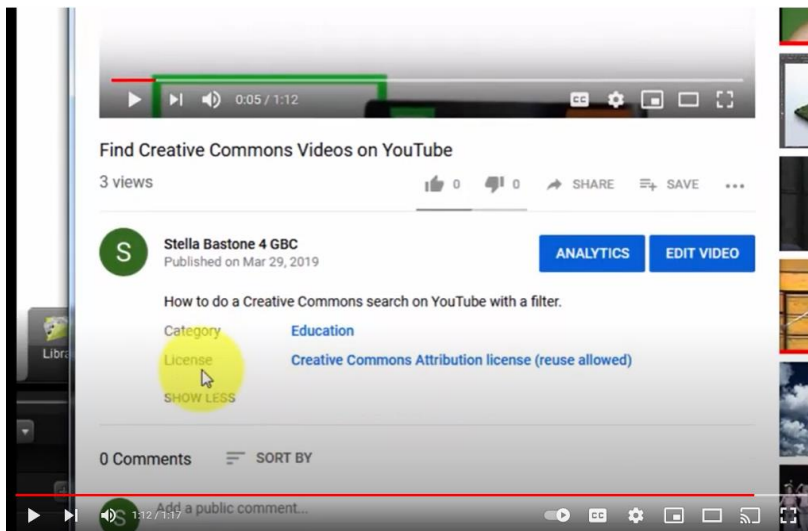
Video: [Add Creative Commons License to Your YouTube Video](https://www.youtube.com/watch?v=6Z2Is0MtxX8) [1:17]
https://www.youtube.com/watch?v=6Z2Is0MtxX8

[Add Creative Commons License to Your YouTube Video](https://www.youtube.com/watch?v=6Z2Is0MtxX8) by [Stella Bastone 4 GBC](https://www.youtube.com/watch?v=6Z2Is0MtxX8) is under [Creative Commons Attribution license (reuse allowed)](https://www.youtube.com/watch?v=6Z2Is0MtxX8) license

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15.Share your work on a Creative Commons platform

Creative Commons organisation works with platforms like Wikipedia, Flickr, and Vimeo to provide their users with the option of licensing works with CC licenses. Through these platforms, over 1.4 billion works have been shared and counting! (*Share your work*, 2021)

16. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

For each scenario, you are asked to evaluate which CC license is the <u>least restrictive</u> but still addresses the concerns and needs of the content creator.

(CC 0, CC BY, CC BY-SA, CC BY-NC, CC BY-NC-SA, CC-BY-ND, or CC-BY-NC-ND)

Activity adapted from License Examples.

1. Mary is a developing photographer who has posted her portfolio online. In the future, she may want to charge for reproductions of her photos. However, currently, as she is still establishing her reputation, she wants her work to be copied as much as possible.

   What CC license should Mary use?

   ○ *CC 0*

   ○ ***CC BY***

   ○ *CC BY-SA*

   ○ *CC BY-NC*

   ○ *CC BY-NC-SA*

- CC-BY-ND

- CC-BY-NC-ND

2. Professor John, a physics professor at a renowned university, has written a new article that includes several visually appealing diagrams. He wishes that these diagrams will assist physics students in comprehending the groundbreaking concepts related to quantum mechanics that made him famous in the past. He does not desire any monetary compensation for the use of the diagrams, nor does he require credit for them. He simply wants to give back to the field of physics, on which his own successful career was established.

   What CC license should John use?

   - **CC 0**

   - CC BY

   - CC BY-SA

   - CC BY-NC

   - CC BY-NC-SA

   - CC-BY-ND

   - CC-BY-NC-ND

17. References

About CC licenses. Creative Commons. (2020, May 22). Retrieved January 5, 2023, from https://creativecommons.org/about/cclicenses/

Public domain. IP Helpdesk. (2020, November 19). Retrieved January 7, 2023, from https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/public-domain-2020-11-19_en#:~:text=Copyright%20in%20a%20work%20in,will%20fall%20into%20public%20domain.

Share your work. Creative Commons. (2021, May 25). Retrieved January 8, 2023, from https://creativecommons.org/share-your-work/

What is creative commons?. Wikimedia Commons. (2017, Feb 7). Retrieved January 7, 2023, from https://commons.wikimedia.org/wiki/File:What_is_Creative_Commons%3F.webm

<End of Book>

Tasks: Open Licenses (Creative Commons Licenses)

Try these tasks to extend your Creative Commons Licenses skills:

1. **Draw a picture** with color pencils and paper.

   Choose a license using the online tool
   https://creativecommons.org/choose/?lang=en

   Select License Features: *Do you allow adaptations of your work to be shared? Do you allow commercial uses of your work?*

   Add machine-readable metadata: *Title of work, Attribute work to name*

   Draw the license icon and copy the text on your paper

2. Use your mobile phone to **take a picture** (object, landscape, food etc).

   Share your work on a Creative Commons platform like flickr

   a. **Create an account** in flickr

   b. **Upload** your photo

   c. **Choose a license** for your photo

   d. You can also rename your photo, add description and add tags to enhance findability

3. Find images that are marked "CC BY" on Flickr or
   https://search.creativecommons.org/

   Save **three** images you want to use (anything you want) and make the appropriate attributions. Make sure to note the:

   - Title

   - Author

   - Source (URL)

   - License type

   You may find useful information on "How to attribute Creative Commons licensed materials" and "Use & remix".

Use the table below to keep track of all the CC material you use as you use it.

Image	Title	Author/s	Source (e.g. website)	Licence

4. Review the following scenario (obtained from Creative Commons Release 'Em Poker by Mandy Henk licensed under CC-BY 4.0) and choose the appropriate CC license using the online tool.

   Scenario: Bob is a political cartoonist, he likes to get his message out to others by sharing his cartoons on their Facebook timelines, however, he wants to reserve his rights to publish his cartoons in paid magazines and wants to ensure when shared, others retain his cartoons in their original form. What licence should Bob use?

Checklist: Open Licenses (Creative Commons Licenses)

When you feel you understand the following aspects of Creative Commons Licenses, select 'I can do these'.

- I can **explain** the concept of copyright and Creative Commons licenses and their purpose

- I can **distinguish** between the different types of Creative Commons licences

- I can **apply** Creative Commons licenses to my own creative work

- I can **share** my work with an open license

- I can **find** open licensed content

- I can **select** open licensed content with respect to the terms of the Creative Commons licences

- I can properly **attribute** an openly licensed work (use and remix)

- **I can do this**

Course check

Open Licenses (Creative Commons Licenses): Check your understanding (quiz - 10 MCQs)

This quiz will help you to consolidate everything you learnt on this course.

You can take the quiz as often as you like, but you must achieve a minimum 80% pass grade.

Upon completion you will receive a Moodle Academy badge.

1.

   The CC BY SA Creative Commons License designates that:

   - Others have the permission to use, modify, and share your work for any purpose, including for commercial use, as long as they give you credit for the original work.

   - Others are allowed to share your work, both for commercial and non-commercial use, as long as it is passed on its original form, with credit given to you as the original creator.

   - **Others can use your work to create new works, including for commercial use, as long as they give credit to you and use the same license terms for the new creations.**

   - Others can modify and use your work for non-commercial purposes only, as long as they give credit to you and use the same license for any new works created from it.

2.

   The CC BY SA Creative Commons License:

   - **allows for the distribution, adaptation and sharing of work, but it prohibits commercial use and requires any derivative works to be distributed under the same license.**

   - allows for the distribution of work but prohibits commercial use and adaptation. It also requires that the work be distributed in its original form without any changes.

- allows for the distribution, adaptation, and sharing of work as long as the original author is credited and any derivative works are distributed under the same license.

3. You work for a company that builds STEM resources for K-12. You want to choose an open license for the educational materials that teachers can download from the website. The license should permit teachers to make copies, distribute the materials, and modify them according to their learners' needs. However, you do not wish for the teachers to use them for commercial purposes. What CC license should you use?

   - CC-BY

   - CC-BY-SA

   - **CC-BY-NC**

   - CC-BY-NC-ND

4. You want to create a lesson plan using content licensed under the creative commons licenses. You found an image distributed under CC-BY-SA license and a chart distributed under CC-BY-NC-SA license. What is the least restrictive license under which you can distribute your lesson plan?

   - CC-BY

   - CC-BY-SA

   - CC-BY-NC-SA

   - **You cannot combine CC-BY-SA and CC-BY-NC-SA licenses**

5. Jim loves to sketch and posts all of his drawings on his art blog. Lately, people have been taking his art and turning them into memes by adding snarky text to the bottom. Jim likes the idea of people sharing his work more broadly, but he doesn't want people to mess with his original art. What CC license should Jim use?

   - CC0

   - CC-BY

   - CC-BY-ND

   - **CC-BY-SA**

Activity adapted from License Examples by CC Wiki distributed under a Creative Commons Attribution 4.0 license

6. You can use Creative Commons Search to download openly licensed content like (select all that apply):

   - **Images**

   - Lesson plans

   - Educational experiments

   - **Audio**

   - Video

7. **T**/F: You can use YouTube to find Creative Commons (CC) licensed Videos by searching for material by keyword and narrowing down the results with the filters to only display videos that have a CC license.

8. You want to use somebody else's work without modification in a student workbook that you will sell. Which license(s) allow for this? (Select all that apply)

   - ❏ **CC BY**

   - ❏ **CC BY-SA**

   - ❏ **CC BY-ND**

   - ❏ CC BY-NC-SA

   - ❏ CC BY-NC

   - ❏ CC BY-NC-ND

9. You want to raise students' awareness and understanding of what deepfakes are, how they can cause harm, and how they could be regulated. You want to use the Deepfakes: Exploring Media Manipulation lesson plan from the OER Commons, but you want to make adaptations based on your students' needs, such as translating it. Does the license permit adaptations?

   - Yes

   - **No**

10. Select the proper attribution for this photo

    https://www.flickr.com/photos/36703170@N02/5060030894

    - **Cat cafe in Seoul by toel-uru is licensed under CC BY-NC-SA 2.0.**

    - Cat cafe in Seou by toel-uru is licensed under Some rights reserved

- [I like cats](#) by [mynx-chan](#) is licensed under [CC BY-NC-SA 2.0](#).

- [Cat in a basket](#) by flickr is licensed under [CC BY-NC-SA 2.0](#).

Feedback

Provide feedback

Please answer these short questions. They should take only a few minutes to complete.

Videos and transcripts for download

Videos for download

- **[A Shared Culture](#) [3:20] [https://www.youtube.com/watch?v=1DKm96Ftfko](#)**

- **[Add Creative Commons License to Your YouTube Video](#) [1:17] [https://www.youtube.com/watch?v=6Z2Is0MtxX8](#)**

- **[Creative Commons License Chooser Demo](#) [4:54] [https://www.youtube.com/watch?v=iHDYenuFFtA](#)**

- **[Finding Creative Commons Videos on YouTube](#) [1:16] [https://www.youtube.com/watch?v=YMBRkTTMWtw](#)**

- **[What are Creative Commons Licenses?](#) [1:57] [https://www.youtube.com/watch?v=srVPLrmlBJY&t=12s](#)**

Transcripts for download

- **[A Shared Culture - Video Transcript](#)**

- **[Add Creative Commons License to Your YouTube Video - Video Transcript](#)**

- **[Creative Commons License Chooser Demo - Video Transcript](#)**

- **[Finding Creative Commons Videos on YouTube - Video Transcript](#)**

- **[What are Creative Commons Licenses? - Video Transcript](#)**

Open Digital Education Eco-system: *Module* 3 Open content (Open Educational Resources)

Welcome

Welcome to the Open Content course, where you will learn about the Open Educational Resources.

Announcements (forum)

General news and announcements from the course facilitators.

About this course (book)

Before you begin, review the Course overview, Learning outcomes, Course structure and Completion and assessment information.

Course overview

Aim

In this course you will:

- Review what you already know about Open Education and Creative Commons licenses

- Learn the definition of Open Educational Resources

- Learn how to search for resources in important European and International OER repositories using keywords and metadata

- Learn how to evaluate a resource based on criteria and using well established rubrics

- Learn how to select OERs to edit/adapt respecting the terms of their licences

- Learn how to adapt/refine an OER to meet your instructional objectives and student learning needs

- Learn how to consider the Accessibility Principles when evaluating and adapting an existing resource

- Learn how to create accessible and editable OERs shared in well known repositories with the appropriate license

Format

This is a self-paced course without active moderation. You are encouraged to discuss ideas in the discussion forums and respond to other learners' queries.

Learning time

The estimated learning time to complete this course is 8 hours.

Learning outcomes

By the end of this course, you will be able to:

Use, develop and evaluate open content in school practice. More specifically you will be able to:

- **recognise** Open Educational Resources based on the OER definitions
- **recall** important OER Repositories and **find** open educational resources according to your needs
- use well established rubrics to **evaluate** an OER
- **select** OERs to edit/adapt with respect to the terms of their licences
- **adapt/refine** an OER to meet your instructional objectives and student learning needs
- **evaluate** and **improve** the accessibility of an existing OER according to the Accessibility Principles
- **create and share** an OER making your work as open, editable, accessible and discoverable as possible

Course structure

Welcome

Find out how the course works, check your prior understanding and join in an optional general discussion.

Review, learn and practice

- Review the "Tutorial: Open Content (Open Educational Resources)" reading all the sections.
- Browse the "Tasks: Open Content (Open Educational Resources)", and try the suggested tasks to extend your skills.
- Complete the "Checklist: Open Content (Open Educational Resources)", confirming your understanding.

Course check

Test your understanding in the final quiz.

Digital competences

This course relates to the following competence(s):

1.2 Professional collaboration

2.1 Selecting

2.2 Creating & Modifying

2.3 Managing, protecting, sharing

5.1 Accessibility & inclusion

6.3 Digital content creation

Completion and assessment

To complete the course you need to complete the following activities:

- View 'About this course' book.
- Complete the ' Course pre-check: What do you already know?'.
- View the 'Tutorial: Open Content (Open Educational Resources)', reading all sections.
- View the 'Tasks: Open Content (Open Educational Resources)', trying out the suggestions.
- Complete the 'Checklist: Open Content (Open Educational Resources)', confirming your understanding.
- Achieve 80% or more in the 'Open Content (Open Educational Resources): Check your understanding' quiz.

Completing the activities

- Some activities are automatically marked as completed based on specific criteria.
- Some activities require you to manually mark them as done.

Make sure you complete the activities according to their completion conditions.

Course badge

Upon successful completion of this course you will be automatically awarded with a badge to showcase the skills and knowledge you have obtained.

Next steps and Certificate

If you complete this course successfully, why not take our other courses in the Open Digital Education Eco-system program and be awarded ~~optionally purchase~~ the Open Digital Education Eco-system Open Badge?

Commented [4]: This needs to be updated in the English Version

Opening Up Education

- Describe the core and transversal dimensions of openness.
- Formulate an OER adoption strategy in school practice.

Open Licenses (Creative Commons licenses)

- Recognise and apply open licenses.

Open Technology

- Be able to select and describe open technology solutions in the school context.

Open Data in Education

- Be able to assess the benefits of open data in teaching and learning and integrate open educational data in school practice to achieve impact.
- Understand the significance of informed consent and educational data protection policies as key Ethical Principles.

HIDE Greek - National Case Studies

Credits

Many thanks to the following individuals who contributed to this course, whether it be providing content and instructions, or providing feedback to help improve the design of this course.

- Sofia Mougiakou, University of Piraeus Research Centre (UPRC), Greece;
- Dimitra Vinatsella, University of Piraeus Research Centre (UPRC), Greece;
- Demetrios G. Sampson, University of Piraeus Research Centre (UPRC), Greece.

Licence

This course, developed within the frame of EU project "Open Digital Competences Training for School Educators", project id 2021-1-ES01-KA220-SCH-000027770
Launched in Spring 2024, by Sofia Mougiakou, Dimitra Vinatsella, Demetrios G. Sampson (University of Piraeus Research Centre - UPRC), Greece and Moodle Academy (Moodle Pty Ltd) is licensed under CC BY-NC-SA 4.0. Original resources available at Moodle Academy.

› Read more about how you should attribute this work.

<div align="center">[End of Book]</div>

General discussion forum (forum)

Course pre-check: What do you already know? (quiz)

A quiz for testing learners' prior knowledge.

You can take it as often as you like. It will not affect your final grade.

1. **T**/F: Open Educational Resources (OER) are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits repurposing by others.

2. Is the collection provided by the Cleveland Museum of Art freely available?

   a. **Yes**

   b. Yes but only for non-commercial use

   c. No

3. Is the collection provided by the Cleveland Museum of Art licensed in a way that allows for adaptations and modifications?

   a. **Yes, you can copy, modify, distribute and perform the work, even for commercial purposes, all without asking permission.**

   b. No, you can copy and distribute the work, but modifications are not allowed.

4. When using or citing work provided by the Cleveland Museum of Art collection, you should by all means imply endorsement by the author or the affirmer.

   a. True

   b. **False**

Review, learn and practice

Tutorial: Open Content (Open Educational Resources)

1. Focus for this tutorial

In this tutorial we explore:

- Open Educational Resources

- OER Repositories

- How to find and evaluate an OER

- How to adapt/refine an OER

- How to create and share an OER

- How to improve accessibility

- How to make an OER editable

2. OER Definitions

[UNESCO first defined the term open educational resources (OER)](#) in 2002 as "technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes".

The [William and Flora Hewlett Foundation](#) provides the following definition of open educational resources: 'teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. OERs include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge.' (Marshall & Casserly, 2006)

The transcript and MP4 file may be downloaded from the folders: [Videos for download](#) and [Transcripts for download](#).

Video 1 [Open Educational Resources concept: What is an OER?](#)

Video: Open Educational Resources concept: What is an OER? [0:57]

https://www.youtube.com/watch?v=EImihZVE0sA

Open Educational Resources concept: What is an OER? by UNESCO is under Creative Commons Attribution license (reuse allowed)

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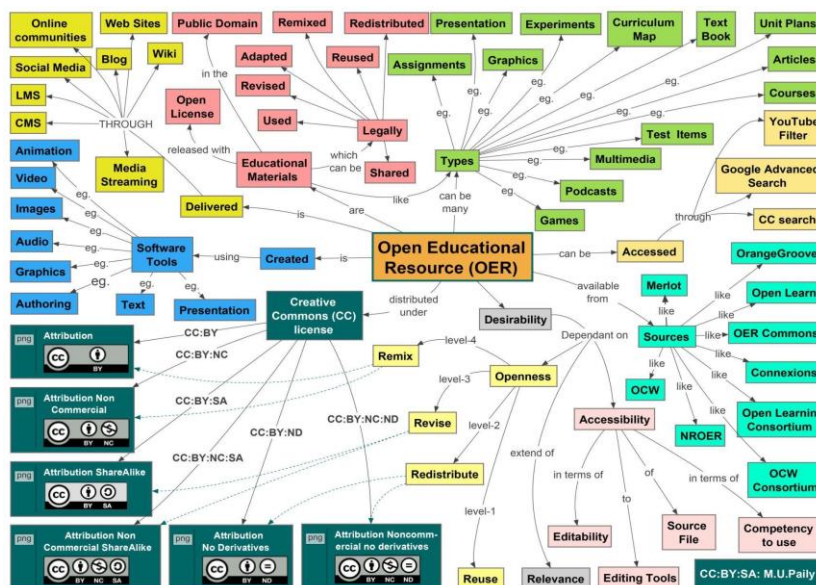
3. **OER Concept Map**

Image 1 OER Concept Map

Image: OER Concept Map by M.U.Paily, via Wikimedia Commons,

**is licensed under **

Study the OER Concept Map created by M.U.Paily and complete the sentences:

- An OER can be created using software tools like…

- OERs are educational materials released with … License or in the ….

- OERs are educational materials which can be legally …

- OERs can be many types like …

- OERs can be delivered through …

4. **Quick Check**

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. T/**F**: OER must have been released under one of the CC licenses

2. OER can include (Select all that apply)

    - A free educational video on Youtube like the What is Sound? video by SciShow Kids

    - **An online textbook labelled with CC-BY license, like The Essential Guide to Planet Earth by Benjamin Burger**

    - An image from Google images like this wave image

    - A free course in Coursera like the Google UX Design Professional Certificate

    - **A Tale of two cities published in 1859 by Charles Dickens**

5. **The OER cycle**

The OER cycle was introduced at the Open University (TESS-India* course 'Enhancing Teacher Education through OER') to describe the process of integrating OER in a learning scenario.

Image 2 Enhancing Teacher Education through OER
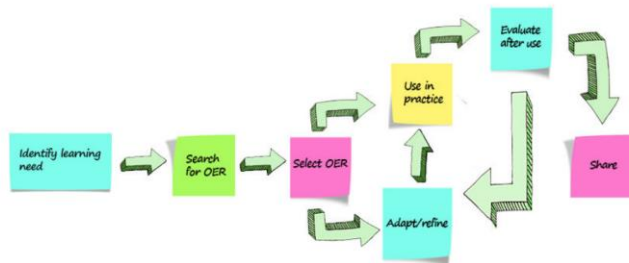
Image: Originally designed for the TESS-India course 'Enhancing Teacher Education through OER' under CC-BY-NC-SA 4.0 international license

The first step of this process is the identification of a learning need, that is gaps between current and required levels of knowledge, skills and abilities of the learners. This triggers a search for appropriate OER. Once a suitable resource is found, it can be used as is in a teaching context, or it can be modified appropriately before being used. Evaluation after use of how well the resource met the learning need indicates if more modifications are necessarily leading to refining the OER. The cycle of refinement, use and evaluation may be repeated several times. Finally, the adapted resource is shared with the community.

*TESSA (Teacher Education in Sub-Saharan Africa) is a network of teachers and teacher educators stretching across Sub-Saharan Africa. At the heart of the network is a bank of open educational resources (OER), linked to the school curriculum, and designed to support teachers and teacher educators in developing active approaches to learning. The network is coordinated by The Open University, UK.

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6. **Searching for OER**

A repository in information technology is a place where data is stored and maintained in an organized way (source: Webopedia).

In the case of OER repositories the data stored are educational resources, varying from single learning objects to entire courses. Learning objects can be textbooks, videos, images, simulations, quizzes etc. On the other hand, OER repositories may contain

lesson plans with accompanying learning objects, learning scenarios or even entire courses.

OpenStax

OpenStax is a collection of peer-reviewed, openly licensed textbooks across disciplines.

Open Textbook Library

The Open Textbook Library collection contains open textbooks that are licensed by authors and publishers to be freely used and adapted.

OASIS

An OER search tool from SUNY Geneseo, OASIS includes the ability to limit search results by license, type, subject, source, and reviews.

OER Commons

OER Commons is a public digital library of open educational resources. Provides a fully searchable catalog including hundreds of open textbooks for use in higher education.

MERLOT

The MERLOT system provides access to curated online learning and support materials and content creation tools, led by an international community of educators, learners and researchers.

BC Campus

BC Campus supports the work of British Columbia's post-secondary system in the areas of teaching, learning, educational technology and open education.

TESSA

Teacher Education in Sub-Saharan Africa, TESSA, is a collaborative network providing free, quality educational resources.

Teaching Commons

The Teaching Commons brings together high-quality open educational resources from leading colleges and universities, curated by librarians and

Internet Archive

Internet Archive is a non-profit digital library with free-to-use content. It includes websites, e-books, software and multimedia such as movies, music, and

their institutions.

images.

Wikibooks

[Wikibooks](#) is a project of the Wikimedia Foundation, that offers a collection of group-written textbooks in a variety of sources following rules similar to Wikipedia.

Project Gutenberg

[Project Gutenberg](#) is a collection of the full text of classics and public domain ebooks.

The Orange Grove

[The Orange Grove](#) repository is Florida's digital repository for instructional resources. The repository provides an environment for educators to search for, use, remix, share, and contribute educational resources.

Apart from searching for OER in different repositories, there is the possibility to use OER meta-search engines for searching simultaneously in various repositories and collections. Two of the most known OER Meta-finders are

- The [Mason OER Metafinder](#)
- The new [MERLOT Smart Search](#)

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7. Mason OER Meta-finder

The [Mason OER Metafinder](#) searches simultaneously across 22 different sources of open educational materials. The following video demonstrates how to use the [George Mason University OER Meta-finder](#) as a tool for locating OER.

The transcript and MP4 file may be downloaded from the folders: [Videos for download](#) and [Transcripts for download](#).

Video 2 Finding OER in the Humanities

Video: [Finding OER in the Humanities](#) [2:51]
https://www.youtube.com/watch?v=xfj0AyKzoF8
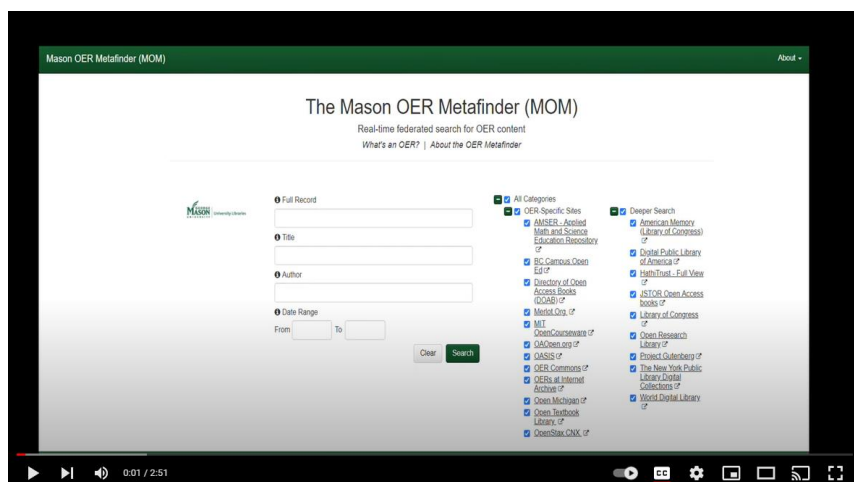
[Finding OER in the Humanities](#) by [liblituwm](#) is under [Creative Commons Attribution license (reuse allowed)](#).

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8. MERLOT smart search

The new [MERLOT Smart Search](#) extends access to learning materials well beyond MERLOT's current curated and peer-reviewed collection. With Smart Search users can search in more than a dozen learning materials libraries to find OER's very, very quickly!

The following video demonstrates how to use MERLOT's Smart Search to find online learning materials in MERLOT, other OER libraries, or anywhere on the web.

The transcript and MP4 file may be downloaded from the folders: [Videos for download](#) and [Transcripts for download](#).

Video 3 MERLOT Smart Search

Video: **MERLOT Smart Search** [3:15]

https://www.youtube.com/watch?v=0GUaCxsjaS8
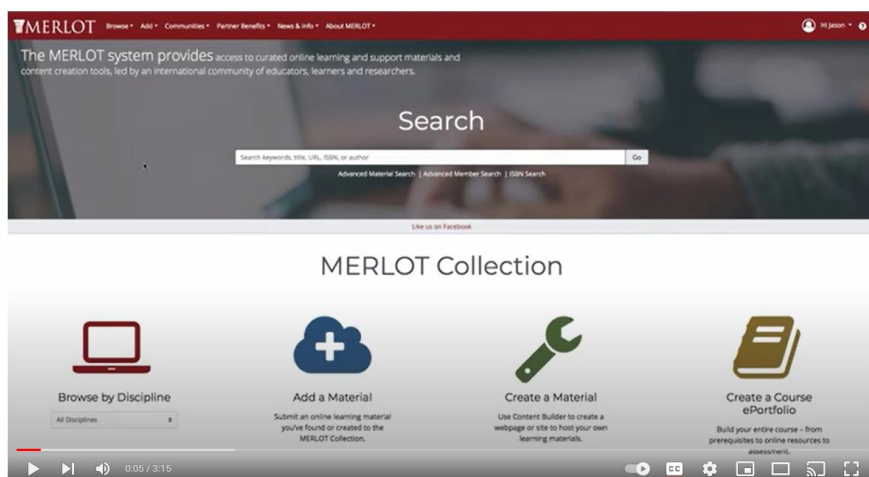
Adapted from Smart Search video by MERLOTPlace licensed under Creative Commons Attribution license (reuse allowed)

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9. Quick Check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. T/**F**: According to the OER cycle, the adaptation of a resource to meet a learning need is mandatory.

2. **T**/F: Some OER repositories may contain Copyright restricted license resources, so it is recommended always to check the license of a resource found before use.

3. T/**F**: Mason OER Metafinder performs a search in static databases it maintains. So search results do not contain resources that may have been added to the original source in the last hours.

10. Evaluating an OER

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 4 Evaluating OER

Video: Evaluating OER [1:43]

Evaluating OER video is adapted from How to Find and Evaluate OER by Abbey Elder distributed under Creative Commons Attribution license (reuse allowed)

Examples of rubrics for evaluating OER:

- Open Textbook Network Review Rubric
  This is the review rubric that is used in the Open Textbook Network's Library, developed by BCcampus.

- Faculty Guide for Evaluating OER
  Developed by BCCampus OpenEd Resources (BCOER), this document provides a checklist of traits to look out for in OER.

- Achieve's Rubrics for Evaluating OER
  Achieve.org has developed a rubric with 8 core principles found in high-quality OER.

- iRubric: Evaluating OER rubric

  OER Assessment Rubric by RCampus. Questions to ask about the OER you are thinking of using.

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11. Using OER Commons and the Achieve OER Evaluation Tool

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 5 Using OER Commons and the Achieve OER Evaluation Tool
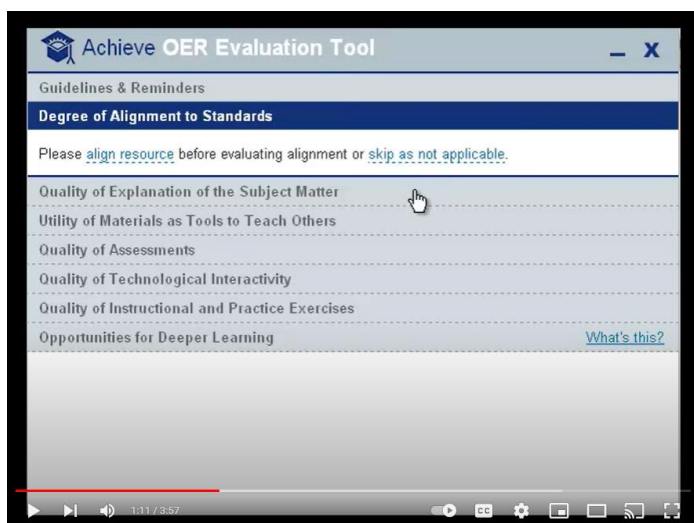
Video: Using OER Commons and the Achieve OER Evaluation Tool [3:43]

https://www.youtube.com/watch?v=9sCAYMiZYMQ

Using OER Commons and the Achieve OER Evaluation Tool by Achieve is under Creative Commons Attribution license (reuse allowed)

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12. Quick Check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. T/**F**: The iRubric, a rubric for evaluating OERs (Open Educational Resources), includes criteria such as Creator Authenticity, Obvious Bias, and Material Currency, but it does not have any evaluation criteria related to accessibility.

2. T/**F**: The Achieve's Rubrics for Evaluating OER can only be used in the OER Commons repository

3. **T**/F: The Achieve's Rubrics for Evaluating OER consist of 8 rubrics including the "Degree of Alignment to Standards" rubric and the "Assurance of Accessibility".

13. Creating and sharing an OER

The video below by ISKME describes how to use the Open Author tool on OER Commons to create and share an OER.

The transcript and MP4 file may be downloaded from the folders: <u>Videos for download</u> and <u>Transcripts for download</u>.

Video 6 How to Use Open Author on OER Commons

Video: <u>How to Use Open Author on OER Commons</u> [4:53]

<u>https://www.youtube.com/watch?v=kaFbQcvF9r4&t=42s</u>
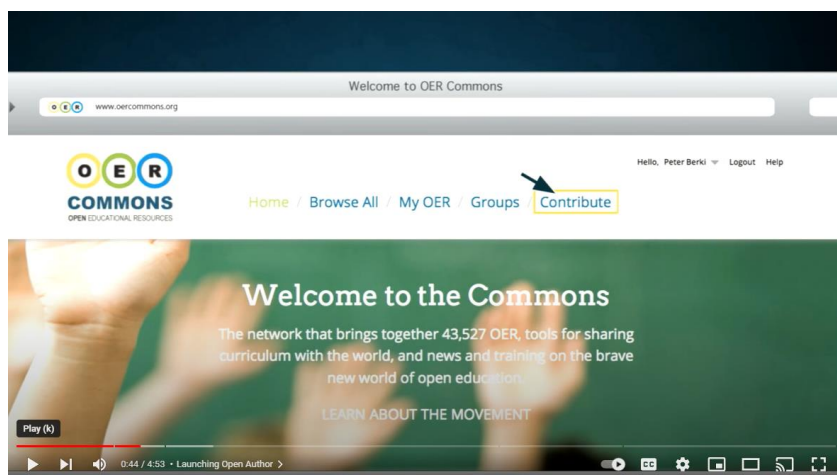
<u>How to Use Open Author on OER Commons</u> by <u>ISKME</u> is under <u>Creative Commons Attribution license (reuse allowed)</u>

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14.Adapting/refining OERs

When designing a course, Wright (2007), in the <u>Commonwealth of Learning (COL)</u> publication, suggests searching for a suitable material that meets your needs and adapting the resources, rather than creating material from scratch. In most cases, re-using most of the content and adding a few activities and examples to ensure relevance to your learners' context is all you need.

While evaluating the resources to incorporate in your course, it helps to keep the following in mind:

- ○ The target audience

- ○ The learning content you need to teach

- ○ The level of the resources in comparison to the level of what you need to teach

- ○ The delivery language
- ○ The delivery media

If you cannot find OER that completely fits your course, you will want to customize an existing OER. The following video, based on Customizing and Authoring Content - Open Resources by Affordable Learning Georgia describes five steps in revising an OER.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 7 Five steps in revising an OER
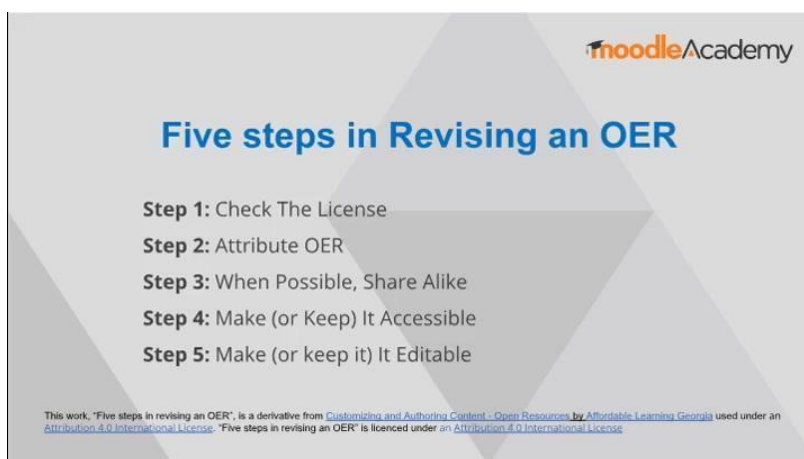
Video: Five steps in revising an OER [3:31]

This video is created by UPRC and it is licensed under CC BY-NC-SA 4.0.

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15.Designing for Accessibility

Accessibility is making OERs usable by as many people as possible.

The Web Accessibility Initiative (WAI) | W3C introduces the acronym POUR for four high-level Accessibility Principles that describe functional accessibility. POUR stands for:

- Perceivable information and user interface means the user can identify content and interface elements by means of the senses. For many users, this means perceiving a system primarily visually, while for others, perceivability may be a matter of sound or touch.

- - Text alternatives for non-text content

    - Captions and other alternatives for multimedia

    - Content can be presented in different ways

    - Content is easier to see and hear

- Operable user interface and navigation means that a user can successfully use controls, buttons, navigation, and other interactive elements. For many users this means using assistive technology like voice recognition, keyboards, screen readers etc.

    - Functionality is available from a keyboard

    - Users have enough time to read and use the content

    - Content does not cause seizures and physical reactions

    - Users can easily navigate, find content, and determine where they are

    - Users can use different input modalities beyond keyboard

- Understandable information and user interface means that users should be able to comprehend the content, and learn and remember how to use the OER.

    - Text is readable and understandable

    - Content appears and operates in predictable ways

    - Users are helped to avoid and correct mistakes

- Robust content and reliable interpretation means that content can be interpreted reliably by a wide variety of users, who should be allowed to choose their own technologies to access OER content.

    - Content is compatible with current and future user tools

The video below is an introduction from the National Center on Accessible Educational Materials to the four POUR principles (Perceivable, Operable, Understandable and Robust) that make for a more accessible experience in learning materials.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 8 Designing for Accessibility with POUR

Video: **[Designing for Accessibility with POUR](#)** [3:04]
[https://www.youtube.com/watch?v=dzzlJQXmJIw](#)

[Designing for Accessibility with POUR](#) by the **[National Center on Accessible Educational Materials](#)** is licensed under a **[Creative Commons Attribution-ShareAlike 4.0 International License](#)**.

Additional material:

For more information, you can consult the [Accessibility Principles | Web Accessibility Initiative (WAI) | W3C](#) website.

16. OER Accessibility Toolkit

Coolidge et al. (2018) in [OER Accessibility Toolkit](#) covers best practices for making an open textbook accessible highlighting why accessibility is important, and the steps required to make various elements accessible.

Organizing Content

- Content is organized under headings and subheadings
- Headings and subheadings are used sequentially (e.g. Heading 1, heading 2, etc)

Images

- Images that convey information include Alternative Text (alt-text) descriptions of the image's content or function.

- Graphs, Charts, and Maps also include contextual or supporting details in the text surrounding the image.
- Images do not rely on colour to convey information.
- Images that are purely decorative contain empty alternative text descriptions. (Descriptive text is unnecessary if the image doesn't convey contextual content information).

Tables

- Tables include row and column headers.
- Table includes title or caption.
- Table does not have merged or split cells.
- Table has adequate cell padding.

Weblinks

- The weblink is meaningful in context, and does not use generic text such as "click here" or "read more".
- Weblinks do not open new windows or tabs.
- If a weblink must open in a new window, a textual reference is included in the link information.

Multimedia

A transcript has been made available for a multimedia resource that includes audio narration or instruction. The transcript includes:

- Speaker's name
- All speech content
- Relevant descriptions of speech
- Descriptions of relevant non-speech audio
- Captions of all speech content and relevant non-speech content are included in the multimedia resource that includes audio synchronized with a video presentation.
- Audio descriptions of contextual visuals (graphs, charts, etc) are included in the multimedia resource.

Formulas

- Formulas have been created using MathML.
- Formulas are images with alternative text descriptions, if MathML is not an option.

Font Size

- Font size is 12 points or higher for body text.
- Font size is 9 points for footnotes or endnotes.
- Font size can be zoomed to 200%.

Additional material:

If you are looking for more technical descriptions of how to make your work accessible, we suggest you review the WCAG (Web Content Accessibility Guidelines).

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17.Providing appropriate text alternatives

As per WebAIM (2021), **Alt text** (a contraction of "alternative text") is read by screen readers in place of images allowing the content and function of the image to be accessible to those with visual or certain cognitive disabilities.

It is displayed in place of the image in browsers if the image file is not loaded or when the user has chosen not to view images.

It provides a semantic meaning and description to images which can be read by search engines or be used to later determine the content of the image from page context alone.

Keep in mind that the alt text should **typically**:

- **be accurate and equivalent** in representing content and function.

- **be succinct.** Content (if any) and function (if any) should be presented as succinctly as possible, without sacrificing accuracy. Typically, only a few words are necessary, though rarely a short sentence or two may be appropriate.

- **not be redundant** or provide the same information as text near the image.

- **not include phrases like "image of …" or "graphic of …", etc.**

Additional material:

You can find detailed examples of alt text in:

[WebAIM: Alternative Text](#)

[Informative Images • Images • WAI Web Accessibility Tutorials (w3.org)](#)

<Next page>

18. Making an OER editable

It's common for open textbooks to be available only in PDF format. Unfortunately, it's difficult to make major changes to a PDF file. On the other hand, converting a PDF document to an editable format is a difficult, time-consuming and imprecise process (Ebeattie, 2013). Watch the following video comparing PDF files to HTML format.

The transcript and MP4 file may be downloaded from the folders: [Videos for download](#) and [Transcripts for download](#).

Video 9 The PDF Reality

Video: [The PDF Reality](#) [3:26]

Information in the video [The PDF Reality](#) was adapted from [MODIFYING AN OPEN TEXTBOOK: WHAT YOU NEED TO KNOW](#) by Walz et al. (2016), licensed under a [Creative Commons Attribution 4.0 International License](#)

Adapted from [6 Steps to modifying an Open Textbook](#) by [EBEATTIE](#), licensed under a Creative Commons Attribution 4.0 International Licence.

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19.Quick Check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

Select the appropriate alternative text description.

1. Image Alt-text

Examine the following image and information found in Wikipedia.
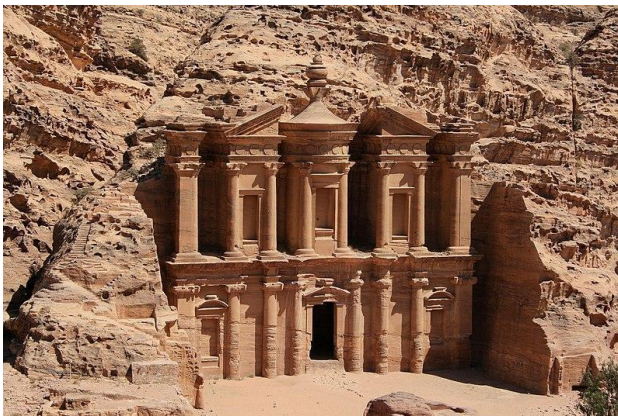
[The Monastery, Petra, Jordan](#) by [Diego Delso](#), is licensed under [CC BY-SA 3.0](#), via Wikimedia Commons

Ad Deir ("The Monastery"), is a monumental building in the ancient Jordanian city of Petra. The Deir was probably carved out of the rock in the mid-first century AD.

Arguably one of the most iconic monuments in the Petra Archaeological Park, the Monastery is located high in the hills northwest of the Petra city center. It is the second most commonly visited monument in Petra, after the Khazneh or "Treasury".

The huge facade, the inner chamber and the other structures next to it or in the wider area around the Deir probably originally served a complex religious purpose, and was possibly repurposed as a church in the Byzantine period.

Wikipedia contributors. (2023, January 17). Ad Deir. In Wikipedia, The Free Encyclopedia. Retrieved 22:00, January 22, 2023, from
https://en.wikipedia.org/w/index.php?title=Ad_Deir&oldid=1134173791

What alt text would you choose for this image of Ad Deir?

- **A large, rock-cut structure that features a grand façade with a large, ornate doorway and several intricate carvings and reliefs.**

- Image of Ad Deir, the monastery of Petra, one of the most impressive and well-preserved monuments in the ancient city and a UNESCO World Heritage Site.

- The Monastery of Petra, also known as Deir el-Deir, is one of the most impressive and well-preserved monuments in the ancient city, and is thought to have been used for religious or spiritual purposes.

- The monastery is a UNESCO World Heritage Site and is considered one of the most iconic and historically significant sites in Petra.

2. Data visualization alt-text

Examine the following graph and information found on the [European Parliament News site](#).
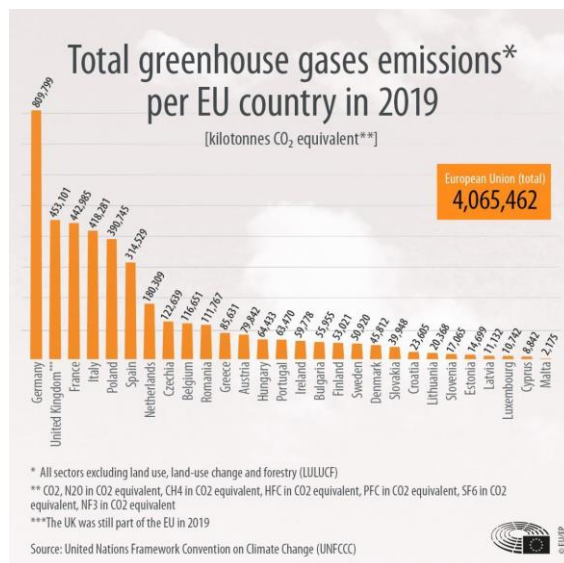
[© European Union, 2021 – Source: European Parliament](#)

Greenhouse gases are gases in the atmosphere that act similarly to the glass in a greenhouse: it absorbs the sun's energy and heat that is radiated from the Earth's surface, traps it in the atmosphere and prevents it from escaping into space.

This process is the main reason for the greenhouse effect that keeps the Earth's temperature warmer than it would otherwise be, allowing life on Earth to exist

Many greenhouse gases occur naturally in the atmosphere, but human activity adds enormous amounts, boosting the greenhouse effect that is contributing to global warming

The chart above lists EU countries by total greenhouse gas (GHG) emissions in 2019.

Information obtained from © European Union, 2021 – Source: European Parliament

Select the alt-text that describes the above data visualization

- Total greenhouse gases emissions per EU country in 2019

- Barchart showing the total greenhouse gases emissions per EU country in 2019 excluding land use, land use change and forestry (LULUCF) by the United Nations Framework Convention on Climate Change (UNFCCC)

- **Barchart of the total greenhouse gases emissions per EU country in 2019 where Germany holds the first place with 809,799 kilotonnes CO2 equivalent, followed by UK, France and Italy.**

- Barchart showing greenhouse gas emissions in the EU, where CO2 is the greenhouse gas that is emitted the most. Other greenhouse gases are emitted in smaller quantities, but they trap heat far more effectively than CO2.

<div align="center">**<Next page>**</div>

20. References

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<End of Book>

Tasks: Open Educational Resources

Try these tasks to extend your Open Educational Resources skills:

1. Choose a Repository from the list of repositories. Use searching or browsing tools provided by the repository in order to find an OER. Take notes of:

   - The name of the repository.

   - The URL of the OER that you found.

   - The subject of the OER.

   - The type of the OER (e.g. image , textbook).

   - The age/grade of the target audience.

   - The type of license of use.

2. Visit OER Commons, login and select an OER you would like to use for your class. Review the resource and press the "**evaluation**" link at the lower right area to evaluate the selected OER using the Achieve rubric.

3. Visit OER Commons, log in and press the "**Add OER**" link to create your contribution to the OER Commons community. Create a standalone learning module, lesson, assignment, assessment or activity using the Open Author tool. Make sure to

   - check the licenses of the resources you use/remix

   - give proper attributions

   - make your resource editable

   - make your resource accessible

Checklist: Open Educational Resources

When you feel you understand the following aspects of Open Educational Resources, select 'I can do these'.

1. I can **recognise** Open Educational Resources based on the OER definitions

2. I can **recall** important OER Repositories and **find** open educational resources according to your needs

3. I can use well established rubrics to **evaluate** an OER

4. I can **select** OERs to edit/adapt with   respect to the terms of their licences

5. I can **adapt/refine** an OER to meet your instructional objectives and student learning needs

6. I can **evaluate** and **improve** the accessibility of an existing OER according to the Accessibility Principles

7. I can **create and share** an OER making my work as open, editable, accessible and discoverable as possible

○ **I can do this**

Course check

Open Content (Open Educational Resources): Check your understanding (quiz - 10 MCQs)

This quiz will help you to consolidate everything you learnt on this course.

You can take the quiz as often as you like, but you must achieve a minimum 80% pass grade.

Upon completion you will receive a Moodle Academy badge.

1. Which of the following educational materials are Open Educational Resources (*Select all that apply*)

   - This youtube video created at Sapientia University, Targu Mures (Marosvásárhely), Romania, presenting the algorithm of LINEAR search with FLAMENCO dance.

   - **This youtube video about Climate Change: The Water Paradigm exploring why maintaining a healthy water cycle is important for the health of the climate.**

   - **This image of a tree**

   - This textbook about Climate Change The Uninhabitable Earth: Life After Warming

2. **T**/F: According to the OER cycle, the steps "Use in Practice", "Evaluate after use", "Adapt/Refine" can be repeated even when the OER the first time has been used without any adaptations.

3. Select the appropriate alt text for the image

The Parthenon is a former temple on the Athenian Acropolis, Greece, that was dedicated to the goddess Athena during the fifth century BC. Its decorative sculptures are considered some of the high points of Greek art, an enduring symbol of Ancient Greece, democracy and Western civilization.

The Parthenon is a peripteral octastyle Doric temple with Ionic architectural features. It stands on a platform or stylobate of three steps. In common with other Greek temples, it is of post and lintel construction and is surrounded by columns ('peripteral') carrying an entablature. There are eight columns at either end ('octastyle') and seventeen on the sides. There is a double row of columns at either end.

Information obtained from [Wikipedia](#)

Select the appropriate alt text for the image

- Image of the Parthenon, the magnificent temple on the Acropolis of Athens

- **The temple is made of white marble and has ionic-style columns. The front of the temple features a series of relief sculptures depicting scenes from Greek mythology.**

- The Parthenon is an ancient temple located on the Acropolis in Athens, Greece. It was built in the 5th century BCE, during the height of the Athenian Empire.

- The Parthenon temple is considered one of the most significant examples of ancient Greek architecture, and it is widely recognized as a masterpiece of the Doric order.

4. **Select the appropriate alt text for the graph**

Examine the following graph and information found on the NASA Goddard Institute for Space Studies (GISS).

Source: https://data.giss.nasa.gov/gistemp/graphs/
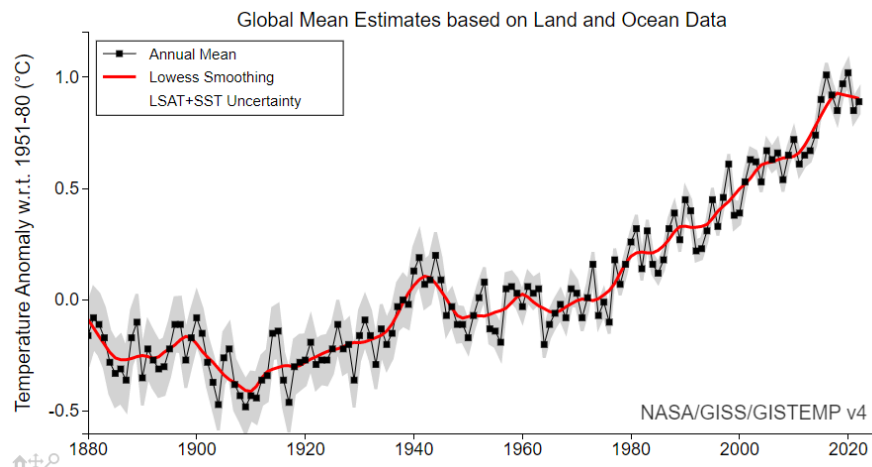
The Land-Ocean Temperature Index (LOTI) is a measure of the average temperature of the land and ocean surface. It is a widely used metric for tracking long-term changes in global temperature. The index is calculated by averaging temperature measurements taken at weather stations and buoys around the world.

The graph shows the Land-ocean Temperature Index, from 1880 to the present, with base period 1951-1980. The solid black line is the global annual mean and the solid red line is the five-year lowess smooth. The grey shading represents the total (LSAT and SST) annual uncertainty at a 95% confidence interval and is available for download.

Select the alt-text that describes the above data visualization

- Line chart showing a solid black line and a solid red line with grey shading.

- Line chart showing the global annual mean and the five-year lowess smooth.

- **Line chart showing the Land-ocean temperature index from 1880 till now indicating that the temperature has increased by 0.8 degrees Celsius.**

5. **T**/F: If you want to search for open textbooks, then [OpenStax](#) and [Open Textbook Library](#) are good places to start.

6. If you want simultaneously search in various repositories and collections then you can try (select all that apply):

   - **The [Mason OER Metafinder](#)**
   - The [Wikimedia Commons](#)
   - **The new [MERLOT Smart Search](#)**
   - The [OER Commons](#)
   - The [Europeana](#)

7. The POUR acronym stands for:

   - Practicable, Operable, Understandable, and Robust
   - Practicable, Observable, Understandable, and Robust
   - **Perceivable, Operable, Understandable, and Robust**
   - Perceivable, Operable, Understandable, and Regular

8. The 5 steps when revising an OER include (select all that apply)

   - **Check The License**
   - If possible make a copy
   - **Attribute OER**
   - Do not make derivatives
   - **When Possible, Share Alike**
   - **Make (or Keep) It Accessible**
   - Save as .pdf
   - **Make (or keep it) It Editable**

9. T/**F**: The PDF format is great for distributing open textbooks because it is easy to revise and keep content up-to-date.

10. **T**/F: If analytics are important to you, PDFs might not be the way to go. You can track the number of times that a PDF file is downloaded, but not which content was accessed most, or which links were followed.

Feedback

Provide feedback

Please answer these short questions. They should take only a few minutes to complete.

Videos and transcripts for download

Videos for download

- **Designing for Accessibility with POUR** [3:04]
  https://www.youtube.com/watch?v=dzzIJQXmJIw

- **Evaluating OER** [1:43]

- **Finding OER in the Humanities** [2:51]
  https://www.youtube.com/watch?v=xfj0AyKzoF8

- **Five steps in revising an OER** [3:31]

- **How to Use Open Author on OER Commons** [4:53]
  https://www.youtube.com/watch?v=kaFbQcvF9r4&t=42s

- **Open Educational Resources concept: What is an OER?** [0:57]
  https://www.youtube.com/watch?v=EImihZVE0sA

- **MERLOT Smart Search** [3:15]
  https://www.youtube.com/watch?v=0GUaCxsjaS8

- **The PDF Reality** [3:26]

- **Using OER Commons and the Achieve OER Evaluation Tool** [3:43]
  https://www.youtube.com/watch?v=9sCAYMiZYMQ

Transcripts for download

- **Designing for Accessibility with POUR - Video Transcript**

- **Evaluating OER - Video Transcript**

- **Finding OER in the Humanities - Video Transcript**

- **Five steps in revising an OER - Video Transcript**

- **How to Use Open Author on OER Commons - Video Transcript**

- **Open Educational Resources concept: What is an OER? - Video transcript**

- **MERLOT Smart Search - Video Transcript**

- **The PDF Reality - Video Transcript**

- **Using OER Commons and the Achieve OER Evaluation Tool - Video Transcript**

Open Digital Education Eco-system: *Module 4* Open Technology

Welcome

Welcome to the Open Technology course, where you will learn about the Open Technology solutions in the school context.

Announcements (forum)

General news and announcements from the course facilitators.

About this course (book)

Before you begin, review the Course overview, Learning outcomes, Course structure and Completion and assessment information.

Course overview

Aim

In this course you will:

- The basics of open source definition and licenses;
- The basics of open interoperability standards;
- The principles of open education technology;
- How to find and select free and open source software tools and packages;
- The key features and criteria for open source Learning Management Systems and indicative Learning Management Systems.

Format

This is a self-paced course without active moderation. You are encouraged to discuss ideas in the discussion forums and respond to other learners' queries.

Learning time

The estimated learning time to complete this course is 7 hours.

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Learning outcomes

By the end of this course, you will be able to:

- ○ **differentiate** free and open source software and **describe** key benefits, distribution terms and licenses

- **explain** the Learning Tools Interoperability standard and its advantages

- **summarise** the principles of open education technology for global quality education infrastructure and the basic components of the Open Edtech framework

- **describe**, **locate** and **select** free and open source software tools and packages

- **describe** the basic benefits, key features and criteria for open source Learning Management Systems in the school context and **list** indicative Learning Management Systems.

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Course structure

Welcome

Find out how the course works, check your prior understanding and join in an optional general discussion.

Review, learn and practice

- Review the "Tutorial: Open technology" reading all the sections.
- Browse the "Tasks: Open Technology", and try the suggested tasks to extend your skills.
- Complete the "Checklist: Open Technology", confirming your understanding.

Course check

Test your understanding in the final quiz.

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Digital competences

This course relates to the following competence(s):

2.2 Creating & Modifying digital resources

2.3 Managing, protecting, sharing digital resources

3.1 Teaching and learning

3.2 Guidance

3.4 Self-regulated learning

6.3 Digital content creation

Completion and assessment

To complete the course you need to complete the following activities:

- View 'About this course' book.
- Complete the ' Course pre-check: What do you already know?'.
- View the 'Tutorial: Open technology', reading all sections.
- View the 'Tasks: Open technology', trying out the suggestions.
- Complete the 'Checklist: Open technology', confirming your understanding.
- Achieve 80% or more in the 'Open technology: Check your understanding' quiz.

Completing the activities

- Some activities are automatically marked as completed based on specific criteria.
- Other activities require you to manually mark them as done.

Make sure you complete the activities according to their completion conditions.

Course badge

Upon successful completion of this course you will be automatically awarded with a badge to showcase the skills and knowledge you have obtained.

Next steps and Certificate

If you complete this course successfully, why not take our other courses in the Open Digital Education Eco-system and be awarded optionally purchase the Open Digital Education Eco-system Open Certificate?

Commented [5]: This needs to be updated in the English Version

Opening Up Education

- Describe the core and transversal dimensions of openness.

- Formulate an OER adoption strategy in school practice.

Open Licenses (Creative Commons Licenses)

- Recognise and apply open licenses.

Open content (Open Educational Resources)

- Be able to use, develop and evaluate open content in school practice.

Open Data in Education

- Be able to assess the benefits of open data in teaching and learning and integrate open educational data in school practice to achieve impact.

- Understand the significance of informed consent and educational data protection policies as key Ethical Principles.

ODCE Greek - National Case Studies

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Credits

Many thanks to the following individuals who contributed to this course, whether it be providing content and instructions, or providing feedback to help improve the design of this course.

- Dimitra Vinatsella, University of Piraeus Research Centre (UPRC), Greece;
- Sofia Mougiakou, University of Piraeus Research Centre (UPRC), Greece;
- Demetrios G. Sampson, University of Piraeus Research Centre (UPRC), Greece.

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1. **Licence**

[End of Book]

General discussion forum (forum)

Course pre-check: What do you already know? (quiz)

A quiz for testing learners' prior knowledge.

You can take it as often as you like. It will not affect your final grade.

1. T/**F**: Open source licenses allow software to be freely used but not to be shared.

2. Which software is considered open source? (Select all that apply)

    - Adobe pdf Reader

- **LibreOffice**

- Microsoft Office

- **OpenOffice**

3. Which of these LMSs is open source?

- Blackboard Learn

- TalentLMS

- **Moodle**

Review, learn and practice

Tutorial: Open technology

1. Focus for this tutorial

In this tutorial we explore:

- Open Source Definition and Licenses

- Open Interoperability Standards

- Open Education Technology

- OpenEdTech Initiative

- Free and Open Source Software Tools and Packages

- Open Source Software Equivalents

- Open Source Software Applications in Education

2. Open Source Definition

According to [Open Source Initiative (2022b),](#) Open Source Software (OSS) is "software that can be freely accessed, used, changed, and shared (in modified or unmodified form) by anyone."

In contrast to OSS, proprietary software "is under restrictive copyright licensing and the source code is usually hidden from the users" ([Wikipedia, 2023c](#)).

Compared to proprietary products, "open-source solutions typically offer more control over features, functionality, maintenance, and costs, with easier pathways to address

security vulnerabilities, software bugs, and evolving needs, often using agile development methodologies" (EDUCAUSE, 2017).

Image 1: Open Source

Image: Open Source from "What is open source software: an introduction" by ellak.gr licensed under CC-BY-SA

Source: https://ellak.gr/2015/09/ti-ine-to-logismiko-aniktou-kodika-mia-isagogi/

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3. The key benefits of OSS

The key benefits of OSS (Opensource.com), include:

Control, as software may be used for any purpose and programmers can examine the code
and modify it to fit their needs.

Training, as the code is publicly accessible, acting as a reference so that users can easily study it and share their work.

Security, as users can spot and correct errors or omissions that a code's original authors might have missed. Faster fix, update and upgrade due to multiple programmers.

Stability, OSS incorporates and operates according to open standards. Users do not rely on original creators to keep the code working.

Community, that actively promotes, uses, tests and ultimately affects the OSS.

Image 2: Key Benefits of Open Source Software

Open Source Software
Key Benefits

Control 01

Training 02

Security 03

Stability 04

Community 05

(*Template Designed by PresentationGO*)
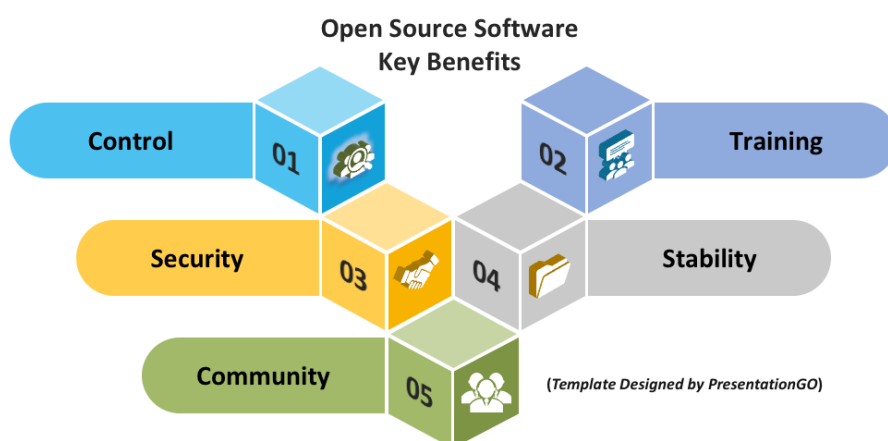
Image: Key Benefits of Open Source Software by UPRC using PresentationGO, licensed under CC BY-NC-SA 4.0.

4. The Open Source Initiative

Nevertheless, as Open Source Initiative (OSI) emphasizes "Open source doesn't just mean access to the source code." The **distribution terms of open-source software must comply with the following 10 criteria** (OSI, 2006) presented in the figure in the previous page, Key Benefits of Open Source Software:

(i) **Free Redistribution** of the software,

(ii) **Source code** distribution with a reasonable reproduction cost,

(iii) Allowing **Modifications and Derivatives**,

(iv) Protecting **Author's source code** integrity,

(v) **No** personal **discrimination**,

(vi) **No restriction on application** in any field and for any purpose, even for being used commercially,

(vii) **License distribution** so that recipients do not need to apply for a separate license,

(viii) **License must not be product-specific**,

(ix) **No restriction on other software** when open source products are bundled with products developed on other software platforms and

(x) **Technology neutrality** so that licenses are not issued on the basis of the specific technology involved.

Image 3: The 10 criteria for distribution terms of open-source software
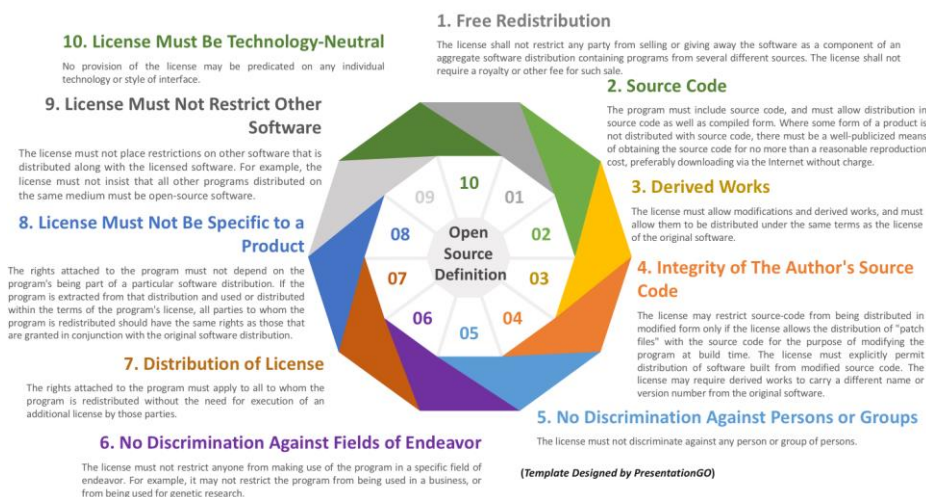
Image: The 10 criteria for distribution terms of open-source software by UPRC using PresentationGO and adapted from "The Open Source Definition" by Opensource.org, licensed under CC BY-NC-SA 4.0.

Nowadays, open source values apply to all aspects of life "expressing a willingness to share, collaborating with others in ways that are transparent" and "committing to playing an active role in improving the world, which is possible only when everyone has access to the way that world is designed" (Opensource.com).

As a way of working, open source goes beyond software production and its principles reach several areas including teaching "which involves applying the concepts of open source to instruction using a shared web space as a platform to improve upon learning, organisational, and management challenges" (Wikipedia, 2023b).

<div align="center">**<Next page>**</div>

5. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. Open source values and principles (Select all that apply)

   apply only to software production.

   apply to all aspects of life.

apply to teaching.

2. Open source software

   - is not stable.

   - permits programmers to examine the code but prohibits modifications.

   - **permits programmers to examine the code and modify it to fit their needs.**

3. T/**F**: Open source means access to the source code.

4. T/**F**: Open source cannot be used commercially.

6. **Open Source Licenses**

Open source licenses "allow software to be freely used, modified, and shared" (OSI, 2022c). One popular set of open source licenses are those approved by the Open Source Initiative (OSI), after going through the Open Source Initiative's license review process.

Indicative widely used OSI-approved licenses are the following:

- Apache License 2.0
- BSD 3-Clause "New" or "Revised" license
- BSD 2-Clause "Simplified" or "FreeBSD" license
- GNU General Public License (GPL)
- GNU Library or "Lesser" General Public License (LGPL)
- MIT license
- Mozilla Public License 2.0
- Common Development and Distribution License
- Eclipse Public License version 2.0

Moodle is OSI certified Free Open-Source Software under GNU Public License.

In this page you may review all OSI-approved licenses sorted by name or category: https://opensource.org/licenses

As per the definition above, Open Source licensed software "is mostly available free of charge" (Wikipedia, 2023b). Moreover, all Open Source software can be used for commercial purposes. However, open source licenses may have some restrictions. For

example, Copyleft license "refers to licenses that allow derivative works but require them to use the same license as the original work" (OSI, 2022b). The GNU General Public License is a widely-used copyleft license.

The section Choosing a License at the Civic Commons wiki may be useful, in order to choose a Open Source license to release your software.

<div align="center">**<Next page>**</div>

7. FOSS and FLOSS

The term Free Software and Open Source Software, referred to as **FOSS** (Free and Open Source Software) or **FLOSS** (Free/Libre/Open Source software) groups together Free Software and Open Source Software. It describes software that is available with specific licenses that allow users to study, modify, and improve the software. The technical way in which this is achieved is the availability of the source code from repositories (source code repositories) (ellak.gr, 2023b).

But, what is the **difference between Free Software and Open Source Software**? The main difference between them is that the term Free Software (supported by the Free Software Foundation - FSF) focuses on the freedoms provided to the user through licensing, while Open Source Software (supported by the Open Source Initiative - OSI) emphasises the availability of the source code and the possibility of collaborative development. From a legal point of view, the above different priorities are expressed by the selection of the respective software licenses. (ellak.gr, 2023b). For example, the availability of Free Software is accompanied by the corresponding license, which guarantees to the user, the freedom of modification and use (ellak.gr, 2023b).

For the licenses' evaluation, the Free Software Foundation (FSF) uses a four-point definition of software freedom (the four essential freedoms), compared to the ten-point definition of the Open Source Initiative (OSI), described in the previous section.

In this page you may review the Free Software Foundation (2022b) classification of various licenses according to certain key criteria: https://www.gnu.org/licenses/license-list.html#SoftwareLicenses. The Free Software Foundation uses "only licenses that are compatible with the GNU GPL for GNU software" (Free Software Foundation, 2022c).

In accordance with open-source software, as emphasised by the Free Software Foundation ""Free software" does not mean "noncommercial." On the contrary, a free program must be available for commercial use, commercial development, and commercial distribution. This policy is of fundamental importance—without this, free software could not achieve its aims" (Free Software Foundation, 2022e).

When it comes to cost, as mentioned earlier for open-source, there are many cases of FOSS, which are available for a specific price, usually providing the buyer with additional services such as maintenance, installation and technical assistance. At the same time,

there is a case where a manufacturer provides FOSS for free and charges only for technical support services (ellak.gr, 2023b).

Moreover, as per GNU Operating System supported by Free Software Foundation (2022d), "Free software means software that respects users' freedom and community. Roughly, it means that **the users have the freedom to run, copy, distribute, study, change and improve the software**. Thus, **"free software" is a matter of liberty, not price.** To understand the concept, you should think of "free" as in "free speech," not as in "free beer."" (Free Software Foundation, 2022e). Therefore, regardless of how the users get copies of a free program (either paid money or at no charge) they always have the freedom to copy and modify the software, even to sell copies (Free Software Foundation, 2021)

8. **Quick check**

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. FOSS stands for

    - **Free and Open Source Software**

    - Fundamental and Open Source Software

    - Free and Open Software Source

    - Free and Open Source Shared

2. T/**F**:Open source licenses have no restrictions.

3. **T**/F:Free Software is not a matter of price.

4. T/**F**:Free Software licenses do not permit users to make copies of the program and sell them.

9. **Open Interoperability Standards**

Learning Tools Interoperability, or **LTI** as it is more commonly known, is a standard developed by 1EdTech Consortium. "The 1EdTech Learning Tools Interoperability (LTI) standard prescribes a way to easily and securely connect learning applications and tools with platforms like learning management systems (LMS), portals and learning object repositories on your premise or in the cloud, in a secure and standard manner and without the need for expensive custom programming" (1EdTech, 2023b). Thus, "it establishes a standard way of integrating rich learning applications, called *tools* (delivered by *tool*

providers) with platforms such as learning management systems, called *tool consumers*"
(Moodle, 2017).

The 1EdTech Learning Tools Interoperability (LTI) standard enables a secure exchange of information between the LMS and the external learning tool, including course information and user identity and thus ensuring that learners can navigate seamlessly from one learning tool to the other without having to log into each one (Verdaguer, 2021).

Some of the **main advantages of LTI** are presented in the figure below. Indicatively, the LTI:

(i) Ensures **Reliability** for content and data exchange by enabling targeted and deeper linking of learning objects,

(ii) Promotes a **better** digital learning **eco-system** as it enables new functionalities via the integration of external content, tools and applications,

(iii) **Saves time** needed for the integration, testing and usage of learning tools,

(iv) **Secures user data exchange** through the direct data transfer and interactions between platforms,

(v) **Minimises the cost** required for the integration of diverse digital resources through the reuse of content and technology across platforms and

(vi) **Supports a clutter-free and light LMS** by enabling plug-and-play content and tools (Satyabrata, 2022).

Image 4 Advantages of LTI

Image: Advantages of LTI
Created by UPRC using TinyPPT, licensed under CC BY-NC-SA 4.0.

10. LTI advantage

As 1EdTech emphasizes "the new core LTI version 1.3 and a package of high-value services align LTI with industry-best security and provides a clear path forward for existing services and new services to pursue the rich integration available between learning platforms and tools. LTI ADVANTAGE is a package of three essential end-user services that build on LTI 1.3. Together, these standards implement features that support key teaching and learning activities, such as the provisioning of usernames and roles so a tool can intelligently address the learner on launch, and the exchange of assignments from a platform to an assessment tool and the subsequent scores back to a central gradebook" (1EdTech, 2023b).

The latest release of Moodle LMS is a certified LTI Advantage Complete platform. The list of LTI-certified products provides a "wide variety of resources -some free and some paid- that can be added to a Moodle site: from textbooks, to Chemistry and STEM tools, to music dictation tools and more" (Verdaguer, 2021).

Moodle can be used as a LTI tool consumer via the External tool (in Moodle 2.2 onwards) that enables users to interact with LTI-compliant learning resources and activities on other websites. "The external tool offers a way for teachers to link to these activities e.g. interactive learning exercises or materials from within their Moodle course page and where available to have grades sent back into Moodle. Students only need to log in to Moodle and they do not have to log in a second time to the connecting site" (Moodle, 2021b).

With regards to LTI tool provider functionality, in Moodle 3.1 onwards, "the 'Publish as LTI tool' enrolment plugin together with the LTI authentication plugin allow remote users on a different site (known as an LTI consumer) to access selected courses and activities" on your Moodle Instance. Thus, "Moodle functions as an LTI tool provider and grades are sent back to the remote system" (Moodle, 2021a).

For further information, you may also watch this video presenting how to publish as LTI tool in Moodle 3.1.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 1 Publish as LTI tool in Moodle 3.1

Video: Publish as LTI tool in Moodle 3.1 [2:26]

Publish as LTI tool in Moodle 3.1 by Moodle is licensed under a

Creative Commons Attribution license (reuse allowed)

Source: https://www.youtube.com/watch?v=cMQiKjXdm3A

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11. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. The Learning Tools Interoperability (LTI) standard (Select all that apply)

   - **prescribes a way to easily and securely connect learning applications and tools with platforms like learning management systems.**

   - creates additional burden and complexity by enabling plug-and-play content and tools.

   - **enables new functionalities via the integration of external content, tools and applications.**

2. Tool consumers are

- rich learning applications.

- **learning management systems.**

- learning resources and activities.

3. **T**/F: Moodle can be used as a LTI tool provider via the Publish as LTI tool.

4. T/**F**: The Publish as LTI tool enables the integration of the functionality provided by another system into your Moodle course.

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12. Principles of Open Education Technology

In an effort to achieve United Nations' Sustainable Development Goal #4 (Quality Education), OpenEdTech Initiative intends to democratise education by ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all.

Open EdTech is designing a global NextGen educational platform that is 100% free and open source, envisioning a future where education technologies are universal, easily accessible, learner-centred and future proof.

Let's now watch a video presenting the initial vision of Dr. Martin Dougiamas, the Moodle Founder and CEO, for a complete, global system of education technology that can support quality education (for humans and AI) in every sector, the Open EdTech framework. It is based on the Launch Paper "Open Education Technology for Global Education Infrastructure", published in September 2022 (Dougiamas, 2022). You can download it from: https://openedtech.net/launch.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 2 Global Quality Education

Global Quality Education

Based on the Launch Paper by Dr Martin Dougiamas "Open Education
Technology for Global Education Infrastructure", September 2022.
openedtech.global

Video: Global Quality Education [7:26]

Global Quality Education by UPRC based on the Launch Paper by Dr. Martin Dougiamas.

You may also watch Martin Dougiamas describing some of the trends and rationale for Open EdTech at the UNESCO World Higher Education Conference 2022, May 18th in Barcelona, Spain.

13.Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. T/**F**: The ideal learning technology should rely on AI teachers

2. The qualities of a global education solution do not include

   - Trust.

   - Inclusivity.

   - **Control by centralised power.**

   - Enjoyability.

3. For the long-term use of a new system, its architecture should follow the principles of

   - Modularity.

   - Upgradeability.

   - **Both Modularity and Upgradeability.**

4. **T**/F : Some of the basic components proposed as important parts of an Open Edtech framework, as described in the "Open Education Technology for Global Education Infrastructure Launch Paper", include: Artificial Intelligence supporting every aspect, federated cloud for safe free hosting of data and apps, as well as reliable storage and curation of OER in OER repositories.

14. Free and Open Source Software Packages

As per the Open Technologies Organization ellak.gr, the main selection criteria for open source software are:

1. **Suitability** for the needs of the business/organization,

2. **Number of active community members** who develop it,

3. **License** used,

4. **Support** of the software internally/externally and

5. **Allocation of Resources** in cooperation with the respective community to support and extend the open software.

Image 5 Selection Criteria for Open Source Software

Main selection criteria for open source software

Suitability
01
suitability for the needs of the business/organization

Community
02
the number of active community members (developers) who develop it

License
03
the license (Available Licenses-http://www.opensource.org/licenses),

Support
04
the existence of executives who are able to undertake the support of the software internally in the company/organization or alternatively the selection of external partners or a local IT company with know-how and experience in supporting the selected software,

Resources
05
the allocation of resources in cooperation with the respective community to support and extend the open software you have chosen, the communities that develop and support the open software are "open" cooperatives based on the active support of all beneficiaries.

(Template Designed by PresentationGO)

Image: Selection Criteria for Open Source Software.

Created by UPRC using PresentationGO and adapted from "Matrix of Software Equivalents" by ellak.gr, licensed under CC BY-NC-SA 4.0.

Source: https://mathe.ellak.gr/pinakas-isodinamon-logismikon-anich/

With regards to the number of FOSS projects, there is no accurate counting since their development is done in a distributed manner throughout the Internet. For example, openhub includes 121,158 FOSS projects and GITHub includes over 35,000,000 project repositories (ellak.gr, 2023b).

You may follow the link to Discover, Track and Compare Open Source Projects.

Moreover, the Free Software Directory is a collaborative catalogue of useful free software.

These Wikipedia links "List of free and open-source software packages" and "Open source" provide additional information of free and open source software grouped by main categories.

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15. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. The main selection criteria for open source software include (Select all that apply):

- Accessibility

- Transparency

- **License used**

- **Number of active community members**

- **Suitability for the needs of the business/organization**

16. Open Source Software Equivalents

Below you may review some indicative Open Source Software Equivalents for both daily and advanced usage. For further information you may also visit https://mathe.ellak.gr/pinakas-isodinamon-logismikon-anich/

Table 1 Open Source Software for daily usage

Table: Open Source Software for daily usage
Adapted from "ΠΙΝΑΚΑΣ ΙΣΟΔΥΝΑΜΩΝ ΛΟΓΙΣΜΙΚΩΝ" by ellak.gr licensed under CC BY 4.0
Source: https://mathe.ellak.gr/pinakas-isodinamon-logismikon-anich/

	Description	Commercial Software	FOSS	Webpage
1	**Operating System**	Microsoft Windows, Mac OS	Ubuntu	https://ubuntu.com/
2	**Office Applications**	Microsoft Office	LibreOffice OpenOffice	https://www.libreoffice.org/ http://www.openoffice.org/
3	**Web Browser**	Edge, Safari	Firefox	https://www.mozilla.org/en-US/
4	**Email Application**	Microsoft Outlook Express	Mozilla Thunderbird Evolution K-9 Mail	https://www.thunderbird.net/en-US/ http://projects.gnome.org/evolution/ https://k9mail.github.io/
5	**Anti-virus**	McAfee	ClamWin	http://www.clamwin.com/

			VirusScan	Lynis	https://cisofy.com/lynis/
6	**Simple Word Processor**	Microsoft Notepad	gedit NotePad++ kedit	http://projects.gnome.org/gedit https://notepad-plus-plus.org/ http://kate-editor.org/
7	**Scheduling team/employee meetings**	Doodle, Calendly	Framadate	https://framadate.org/abc/en/
8	**Reader of pdf files**	Adobe pdf Reader	Evince KDE	http://www.gnome.org/projects/evince/ http://kpdf.kde.org/
9	**Environment for code development**	Microsoft Visual Studio	Code::Blocks (C, C++ and Fortran) Dev-C++ (C και C++) Mono (Microsoft .NET Framework, ECMA standards C# Eclipse Netbeans Geany	w https://www.codeblocks.org/ https://www.bloodshed.net/devcpp.html https://www.mono-project.com/ http://www.eclipse.org/ http://www.netbeans.org/ http://www.geany.org/
10	**Anonymous Web Browser**	Opera	Tor Browser	https://www.torproject.org/download/
11	**Backup and data recovery**	Norton Ghost	PartitionImage	https://www.partimage.org/
12	**File compression/ decompression**	winzip	7-zip	https://www.7-zip.org/
13	**Instant messenger, Internet telephony**	Slack, Discord, Facebook Messenger	Signal	https://www.signal.org/
14	**Programme of meetings scheduling**	Windows Calendar	Kontact	https://kontact.org/
1	**Programme of meetings**	Windows Calendar/Google	Indico	https://getindico.io/

5	scheduling/ Team Collaboration	Workspace		

Table 2 Open Source Software for advanced usage

Table: Open Source Software for advanced usage
Adapted from "ΠΙΝΑΚΑΣ ΙΣΟΔΥΝΑΜΩΝ ΛΟΓΙΣΜΙΚΩΝ" by ellak.gr licensed under CC BY 4.0
Source: https://mathe.ellak.gr/pinakas-isodinamon-logismikon-anich/

	Description	Commercial Software	FOSS	Webpage
1	Instant Messages	Facebook Messenger	Empathy Kopete Pidgin Telegram Signal	https://live.gnome.org/Empathy https://apps.kde.org/kopete/ https://www.pidgin.im/ https://telegram.org/ https://signal.org/
2	Application of file sharing via ftp	CuteFTP	Filezilla gFTP WinSCP	http://filezilla-project.org/ https://github.com/masneyb/gftp http://winscp.net/eng/index.php
3	Music files Player	Apple iTunes	Rhythmbox Amarok DeaDBeeF	http://projects.gnome.org/rhythmbox/ http://amarok.kde.org/ http://deadbeef.sourceforge.net/
4	Environment for image processing	Adobe Photoshop, MS Paint, Corel Painter	Gimp Pinta Krita	http://www.gimp.org/ https://pinta-project.com/download.ashx https://www.krita.org/download
5	Application for sound processing	Adobe Audition, Logic	Audacity Ardour	http://audacity.sourceforge.net http://ardour.org/
6	Environment for recording visual	Nero Burning Rom	Brasero K3b	http://www.gnome.org/projects/brasero/

	media			https://userbase.kde.org/K3b
7	**Application for Multimedia management**	Winamp Windows Media Player, RealPlayer, QuickTime	VLC XBMC Media Center Miro Banshee Audacious	http://www.videolan.org/vlc/ https://xbmc.org/about/ https://www.getmiro.com/ http://www.banshee-project.org/ https://audacious-media-player.org/
8	**Data analytics**	Google Analytics	Matomo Goaccess Umami Plausible-Analytics	https://matomo.org https://goaccess.io/ https://umami.is https://plausible.io/
9	**Video encoders**	DivX	xvid	https://labs.xvid.com/
10	**Voip**	Skype	Ekiga Empathy Linphone Telegram Signal	https://www.ekiga.org/ https://wiki.gnome.org/Apps/Empathy https://www.linphone.org/ https://telegram.org/ https://www.signal.org/

17. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. T/**F**: Adobe Acrobat Professional is considered as FOSS.

2. T/**F**: There is no open software for Statistics Analysis.

3. The FOSS for an Email Application is (Select all that apply)

   Thunderbird

   Evolution

Outlook Express

18. Open Source Software Applications in Education

The impact of the open source movement has the potential to transform the way that teaching and learning takes place, by providing access to a wide range of resources and tools that can be used to support innovative education.

The basic benefits of open source in education include cost effectiveness, flexibility, service continuity, continuous improvement (Lakhan & Jhunjhunwala, 2008), reliability and security (Moodle, 2022). Open standards, collaboration, circulation and easy customization are core components of an open source e-learning software which has gained growing interest as a viable solution in the education domain.

Though, there are various open source Learning Management Systems (LMSs), only a few of them are recommended following specific criteria that include

1. an open source initiative approved license,
2. an active development community,
3. released stable versions,
4. SCORM compliant,
5. published details about previous adopters,
6. a stable organization supporting ongoing development and
7. party reviews published (Aberdour, 2007; Butcher, 2015).

Moreover, to select an appropriate LMS you need to take under consideration the top-most features it should possess, including

1. Intuitive User Interface making it simple and easy to use.
2. Customizability enabling modification of the content over the LMS site.
3. Interactivity to attract your learners' attention.
4. Multi-content Support to deliver an engaging learning experience.
5. Assessment and Evaluation Tools for accreditation/certification.
6. Automation for time efficiency and better organization of the various tasks.
7. Surveys for capturing your learners' feedback.
8. Personalized Learning to keep your learner focused and on the track.
9. Data Analytics and Reporting is considered as the most valuable feature enabling us to get a better understanding of our learners' activities, identify patterns, predict possible future outcomes and take corrective actions.
10. Seamless Integration with Other Platforms.
11. Gamification Tools to enhance participants' motivation to the achievement of the learning goals.
12. Social Learning enabling learners to share and interact with their peers or instructors.
13. Security to ensure users data protection and privacy.

14. Responsive Design to make your content accessible through varieties of devices (ThemeGrill, 2022a).

In the below table you may review some indicative popular open source LMSs and their key features (Bouchrika, 2022; Das, 2021; ThemeGrill, 2022b).

Table 2 Open Source Learning Management Systems

Table: Open Source Learning Management Systems

LMS Tool	Key Features
Moodle http://www.moodle.org	- Popular learning management platform with over 316,000,000 Users worldwide, more than 1.8 Billion Course Enrolments, over 41,000,000 Courses in 42 Languages and more than 179,000 Registered Moodle Sites. (Moodle, 2022). - Simple user interface - Accessibility features - Fully customisable - Plugin availability to extend options - Collaboration and management options - Administrative control options - Full data control and transparency - Regular security updates
Open edX https://openedx.org	- Robust platform for university-tailored programs - Easy to use - Equally supports online courses, online campuses, and online degree programs. - Customizable learner experience reflects user's unique brand identity and preferences. - Real-time data analysis - Interactive forums and discussion boards - Cross-device compatibility - Supports live video conferencing

ATutor https://atutor.github.io/atutor/	• Multi-language support for over 50 languages. • Flexible course creation • Group work & collaboration • Accessibility features • Course import & export from/to several formats. • Multimedia and activities compatibility • Individual content usage statistics • Allows to create work groups for various purposes manually
Masteriyo LMS https://masteriyo.com/wordpress-lms/	• Interactive quiz builder available • Works seamlessly with any WordPress theme • Certificate builder available to award attractive certificates to learners • Allows to add sections and lessons in the course • Customizable and extendable with addons • Distraction-free mode available to keep students engaged • Progress bar available to show learners their progress on the course • No third-party plugin dependency
Canvas LMS https://www.instructure.com/canvas	• Fit for small-scale education programs and higher education • API access • Easy upload and sharing of information • Personalized learning • Canvas API to link other apps and tools • Accepts unlimited file size for audio and video contents • Large number of options for customizations

	• Sends alerts/notifications for important events • Easy for third-party integration
Sakai https://www.sakailms.org	• Simple interface • Course management • Grade assessment • App integration • Collaboration tools • Adopted by many reputable universities worldwide.

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19. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. **T**/F:Data Analytics and Reporting is considered as the most valuable feature for an open-source LMS as it enables us to get a better understanding of our learners' activities, identify patterns, predict possible future outcomes and take corrective actions.

2. T/**F**:A proprietary license by a well-known stable organisation is one of the recommended criteria for an open source LMS.

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Tasks: Open Technology

Try these tasks to extend your Open technology skills:

1. Visit the link Discover, Track and Compare Open Source Projects and select one of the Most Popular Projects. Review the Project Summary and its license properties (permissions, prohibitions and requirements). Check the two different scores of the Project Vulnerability Report and the graphs for Code, Activity and Community. Visit the "Ratings and Reviews" page for this project and read the Most Helpful Review. Lastly, go to the homepage of the project. You are asked to fill in the summary view of the Project table.

Project Name	Type of Project	Number of Users	License Requirements	Security Confidence Index	Total Lines of Code	Year with highest Activity	Average Rating

2. Visit the Free Software Directory and search for Free software to use for education. Select a software of your interest and go to the homepage of the software. Now you may write a short paragraph providing an overview of this project.

3. Review the list of Open Source Software Equivalents for daily and advanced usage. Select an open source software equivalent for a commercial software you have used. Download, install and try the open source software equivalent you selected. You are now requested to write a review comparing it with the respective commercial software. E.g. download and install LibreOffice or OpenOffice. Use the Writer (word processing software) and create a short document describing yourself. Compare this Open Source Software functionalities with Software Equivalents you have already used.

4. Study the content of the sections "What is "free software" and is it the same as "open source"?" by OSI as well as the section "Free software and open source" by FSF (2022a) and write a short paragraph comparing Free Software and Open Source Software.

5. Visit the homepage of Moodle http://www.moodle.org. Go to the page Discover Moodle and review the provided statistics. Visit the section presenting Moodle values and identify the reasons for choosing an open source LMS. Visit the section presenting Moodle history and study the Moodle ecosystem. Design a poster for Moodle LMS.

Checklist: Open Technology

When you feel you understand the following aspects of Open technology, select 'I can do these'.

1. I can **differentiate** free and open source software and **describe** key benefits, distribution terms and licenses.

2. I can **explain** the Learning Tools Interoperability standard and its advantages.

3. I can **summarise** the principles of open education technology for global quality education infrastructure and the basic components of the Open Edtech framework.

4. I can **describe**, **locate** and **select** free and open source software tools and packages.

5. I can **describe** the basic benefits, key features and criteria for open source Learning Management Systems in the school context and list indicative Learning Management Systems.

○ **I can do this**

Course check

Open Technology: Check your understanding (quiz - 10 MCQs)

This quiz will help you to consolidate everything you learnt on this course.

You can take the quiz as often as you like, but you must achieve a minimum 80% pass grade.

Upon completion you will receive a Moodle Academy badge.

1. Open source software

   ● is developed in a centralized way.

   ● has less longevity than its proprietary peers because it is developed by communities rather than a single author or company.

   ● **is developed in a decentralized and collaborative way.**

2. T/**F**:The main difference between Free Software and Open Source Software is that the term Free Software describes only free of charge programs while Open Source programs are available for a charge as little as possible.

3. Which of the below licenses are OSI-approved and are compatible with the GNU GPL (Select all that apply):

> NASA Open Source Agreement
>
> Open Public License
>
> **GNU General Public License (GPL)**
>
> **Mozilla Public License 2.0**
>
> Apple Public Source License (APSL), version 1.x
>
> **Apache License 2.0**
>
> The JSON License
>
> **BSD 3-Clause "New" or "Revised" license**

4. Copyleft license refers to licenses that

- allow derivative works that can be distributed under other licenses, including proprietary (non-open-source) licenses.
- do not allow derivative works.
- **allow derivative works but require them to use the same license as the original work.**
- are not OSI approved.

5. Users have the freedom to charge money for distributing copies of Free Software,

- only if the users have paid money to get copies of the free program.
- **regardless of how the users get copies of the free program (either paid money or at no charge).**
- only if the users have obtained copies of the free program at no charge.
- only if the respective license permits the users to make copies and sell them.

6. The Learning Tools Interoperability (LTI) standard (Select all that apply)

> **enables a secure exchange of information between the LMS and the external learning tool.**

requires that users log into each learning tool they navigate.

enables targeted and deeper linking of learning objects.

requires expensive custom programming to integrate diverse digital resources into an organisation's ecosystem.

ensures that learners can navigate seamlessly from one learning tool to the other.

7. Moodle is used as a LTI tool consumer

- **when enabling users to interact with LTI-compliant learning resources and activities on other websites and where available to have grades sent back into Moodle.**

- when enabling users to interact with LTI-compliant learning resources and activities on other websites and where available to have grades sent back to the remote system.

- when enabling users on a different site to access selected courses and activities on the Moodle Instance and where available to have grades sent back to the remote system.

8. The desired qualities of a global education solution than needs to be maximised include (Select all that apply):

Scalability

Unification of services with software

Inclusivity

Accuracy

AI-centered

9. The FOSS for an Application of file sharing via ftp is (Select all that apply):

CuteFTP

Filezilla

gFTP

10. The key features to select an open-source LMS include (Select all that apply):

Data Analytics and Reporting

Security

Scalability

Gamification Tools

Static-Content Support

Feedback

Provide feedback

Please answer these short questions. They should take only a few minutes to complete.

Videos and transcripts for download

Videos for download

- [OpenEdTech.mp4](#)

- [Publish as LTI tool in Moodle 3.1.mp4](#)

Transcripts for download

- [OpenEdTech.srt](#)

- [Publish as LTI tool in Moodle 3.1.srt](#)

Open Digital Education Eco-system: *Module 5* Open Data in Education

Welcome

Welcome to the Open Data in Education course, where you will learn about the principles of Open Data in Education.

Announcements (forum)

General news and announcements from the course facilitators.

About this course (book)

Before you begin, review the Course overview, Learning outcomes, Course structure and Completion and assessment information.

Course overview

Aim

In this course you will learn:

- the key features of open data

- the basics of open data licences, their importance and how to select the right type of licence

- the dimensions to assess open data maturity

- how to find open datasets

- the basics of educational data

- how to create (collect, clean and curate) an open educational dataset

- how to distribute an open educational dataset

- how to leverage open educational datasets to achieve impact in teaching, learning and assessment.

- the key Ethical Principles that govern the use of educational data, in terms of privacy, security of data and informed consent that should be addressed via transparent and well-defined ethical policies and codes of practice.

Format

This is a self-paced course without active moderation. You are encouraged to discuss ideas in the discussion forums and respond to other learners' queries.

Learning time

The estimated learning time to complete this course is 10 hours.

Learning outcomes

By the end of this course, you will be able to:

- **describe** the key features and kinds of open data and **explain** why we need open data
- **list** the open data licences, **explain** their added-value and **select** the right type of licence
- **explain** the four dimensions to assess open data maturity
- **locate** open data sets
- **define** and **categorise** educational data
- **collect** and **manage** an open educational dataset
- **describe** metadata
- **assess** the benefits of open data in teaching and learning and **integrate** open educational data in school practice to achieve impact
- **recognise** the significance of informed consent, individual's rights and educational data protection policies as key Ethical Principles.

Course structure

Welcome

Find out how the course works, check your prior understanding and join in an optional general discussion.

Review, learn and practice

- Review the "Tutorial: Open Data in Education" reading all the sections.
- Browse the "Tasks: Open Data in Education", and try the suggested tasks to extend your skills.
- Complete the "Checklist: Open Data in Education", confirming your understanding.

Course check

Test your understanding in the final quiz.

Digital competences

This course relates to the following competence(s):

1.2 Professional collaboration

1.3 Reflective practice

2.1 Selecting digital resources

2.2 Creating & Modifying digital resources

2.3 Managing, protecting, sharing

3.1 Teaching

3.2 Guidance

3.4 Self-regulated learning

4.2 Analysing evidence

4.3 Feedback and planning

5.2 Differentiation and personalisation

6.3 Digital content creation

6.4 Responsible use

Completion and assessment

To complete the course you need to complete the following activities:

- View 'About this course' book.

- Complete the ' Course pre-check: What do you already know?'.

- View the 'Tutorial: Open Data in Education', reading all sections.

- View the 'Tasks: Open Data in Education', trying out the suggestions.

- Complete the 'Checklist: Open Data in Education', confirming your understanding.

- Achieve 80% or more in the 'Open Data in Education: Check your understanding' quiz.

Completing the activities

- Some activities are automatically marked as completed based on specific criteria.

- Some activities require you to manually mark them as done.

  Make sure you complete the activities according to their completion conditions.

  Course badge
  Upon successful completion of this course you will be automatically awarded a badge to showcase the skills and knowledge you have obtained.

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  Next steps and Certificate

  If you complete this course successfully, why not take our other courses in the Open Digital Education Eco-system and be awarded ~~optionally purchase~~ the Open Digital Education Eco-system Open Certificate?

- Opening Up Education
    - describe the core and transversal dimensions of openness
    - formulate an OER adoption strategy in school practice

- Open Licenses (Creative Commons Licenses)
    - Recognise and apply open licenses.

- Open Content (Open Educational Resources)
    - Be able to use, develop and evaluate open content in school practice

- Open Technology
    - Be able to select and describe open technology solutions in the school context

- ODEE-Greek - National Case Studies

  \<Next page\>

  Credits

  Many thanks to the following individuals who contributed to this course, whether it be providing content and instructions, or providing feedback to help improve the design of this course.

    - Dimitra Vinatsella, University of Piraeus Research Centre (UPRC), Greece;
    - Sofia Mougiakou, University of Piraeus Research Centre (UPRC), Greece;

- Demetrios G. Sampson, University of Piraeus Research Centre (UPRC), Greece.

Licence

This course, developed within the frame of EU project "Open Digital Competences Training for School Educators", project id 2021-1-ES01-KA220-SCH-000027770
Launched in Spring 2024, by Dimitra Vinatsella, Sofia Mougiakou, Demetrios G. Sampson (University of Piraeus Research Centre - UPRC), Greece and Moodle Academy (Moodle Pty Ltd) is licensed under CC BY-NC-SA 4.0. Original resources available at Moodle Academy.

› Read more about how you should attribute this work.

[End of Book]

General discussion forum (forum)

Course pre-check: What do you already know? (quiz)

A quiz for testing learners' prior knowledge.
You can take it as often as you like. It will not affect your final grade.

1. Open data is

   - data that is available on the Web.

   - **data that anyone can access, use and share.**

   - data that is always available.

2. T/**F**: Open data does not need to be licensed.

3. Educational data comprises a wide range of datasets (Select all that apply):

   about learners.

   stored only in institutional student information systems.

   about students' learning.

   restricted to students' grades in national exams and standardised tests.

   about the environments in which students learn.

Review, learn and practice

Tutorial: Open data in education

1. **Focus for this tutorial**

In this tutorial we explore:

- Open data definition and key features

- Open data licenses

- Dimensions to assess open data maturity

- How to find open datasets

- Educational data definition and categories

- Collection and Management of open educational datasets

- Metadata of open educational datasets

- Benefits of open data in teaching and learning and how to integrate open educational data in school practice to achieve impact

- Key Ethical Principles that govern the use of educational data.

2. **What is open data?**

According to Open Knowledge Foundation in Open Definition "Open data can be freely used, modified, and shared by anyone for any purpose".

The key features of **Openness** are **Availability and access, Reuse and redistribution** and **Universal participation** (Open Knowledge Foundation, n.d. -e), as presented in the below figure.
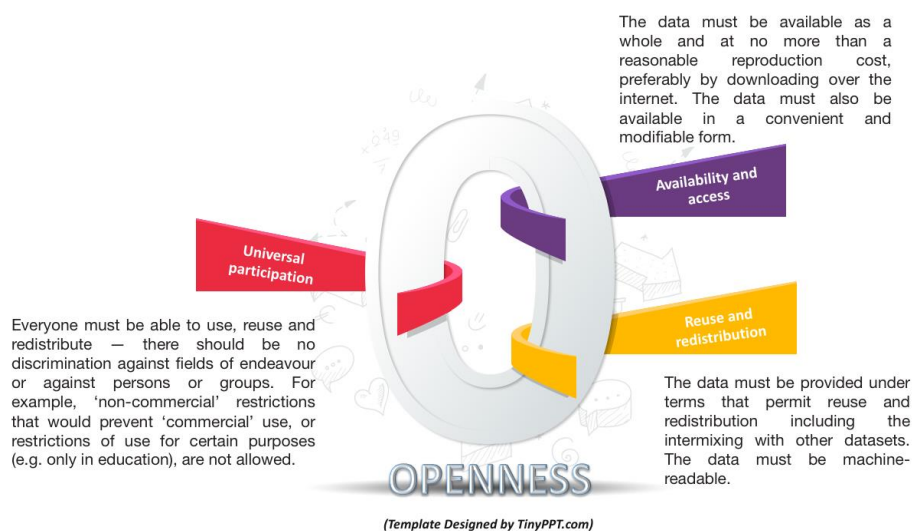
Image 1 Key features of Openness

The data must be available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the internet. The data must also be available in a convenient and modifiable form.

Availability and access

Universal participation

Everyone must be able to use, reuse and redistribute — there should be no discrimination against fields of endeavour or against persons or groups. For example, 'non-commercial' restrictions that would prevent 'commercial' use, or restrictions of use for certain purposes (e.g. only in education), are not allowed.

Reuse and redistribution

The data must be provided under terms that permit reuse and redistribution including the intermixing with other datasets. The data must be machine-readable.

OPENNESS

(Template Designed by TinyPPT.com)

Image: Key features of Openness

Created by UPRC using TinyPPT and adapted from "What is open?" by Open Knowledge Foundation, licensed under CC BY-NC-SA 4.0.

Source: https://okfn.org/opendata/

There are many kinds of open data that have potential uses and applications (Open Knowledge Foundation, 2022):

- **Culture data** about cultural works and artefacts.

- **Science data** produced as part of scientific research.

- **Finance data s**uch as government accounts and information on financial markets.

- **Statistics data** produced by statistical offices such as the census.

- **Weather data** used to understand and predict the weather and climate.

- **Environment data** related to the natural environment.

Image 2 Kinds of Open Data

(Template Designed by Showeet.com)

Image: Kinds of Open Data by UPRC

Created by UPRC using Showeet.com and adapted from "What is open?" by Open Knowledge Foundation, licensed under CC BY-NC-SA 4.0.

Source: https://okfn.org/opendata/

In this video, 'E-learning Module - What is open data?' by Publications Office of the European Union, ODI Trainer Dr. David Tarrant explains further what data is, what makes it open and why we need open data.

The Open Data Handbook provides a complete look at open data including a detailed guide on how to open it up and a glossary of key terms.

You may also review the official portal for European open data data.europa.eu (European Commission, n.d. -b) where you can access 1.544.795 datasets grouped by catalogue (176 catalogues) or by country (36 countries) and explore 184 inspiring stories about open data and 38 courses with learning material.

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3. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. Open Data becomes usable by being made available (Select all that apply):

in a common format.

in an understandable format.

in an unmodifiable mode.

online.

2. Open data should be

- **free of restrictions for its use.**

- used for specific purposes.

- available at a high cost.

3. T/**F**: Open data should come at no cost.

4. As per the video "**E-learning Module - What is open data?**", we need Open Data to

- make governments accountable.

- **unlock social, environmental and economic value**.

- minimise the cost of access.

4. **Open data licences**

"Data which is shared with a licence becomes Open Data" (European Commission, n.d. - d).

In the video 'E-learning Module - Why do we need to license?' by Publications Office of the European Union, Open Data Institute (ODI) Policy Lead Ellen Broad explains why we need open data licences, how they help unlock the value of data and best practice in choosing the right type of licence.

As per Ellen Broad "Without a licence, your data is not truly open. You need a licence that tells other people that they can access, use and share your data."

There are many licences available that we can categorise in 3 basic types: Creative Commons Licences widely used for open content, Bespoke or Custom-made Licences created by the data publisher with specific conditions the user should comply with and Open Government Licences. These licences are further described in the below figure (European Commission, n.d. -f).
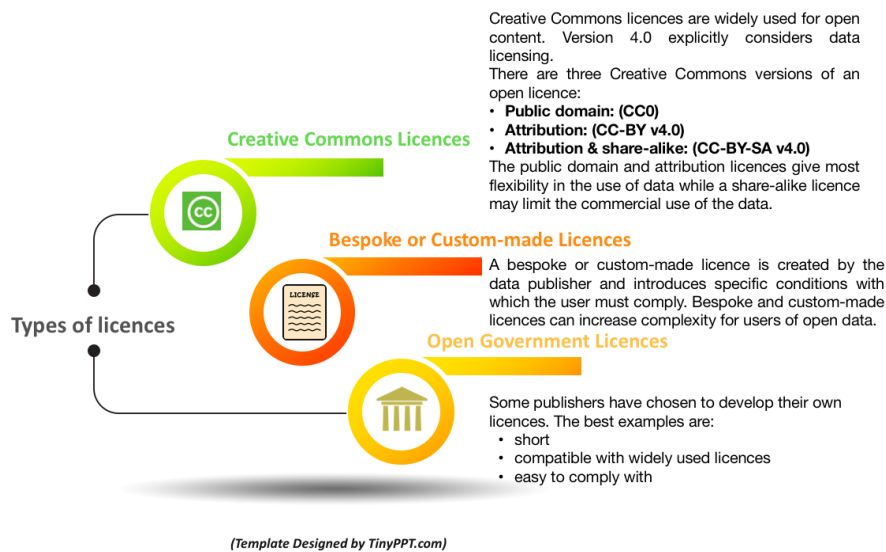
Image 3 Types of Licences

Creative Commons licences are widely used for open content. Version 4.0 explicitly considers data licensing.

There are three Creative Commons versions of an open licence:
- **Public domain: (CC0)**
- **Attribution: (CC-BY v4.0)**
- **Attribution & share-alike: (CC-BY-SA v4.0)**

The public domain and attribution licences give most flexibility in the use of data while a share-alike licence may limit the commercial use of the data.

A bespoke or custom-made licence is created by the data publisher and introduces specific conditions with which the user must comply. Bespoke and custom-made licences can increase complexity for users of open data.

Some publishers have chosen to develop their own licences. The best examples are:
- short
- compatible with widely used licences
- easy to comply with

(Template Designed by TinyPPT.com)

Image: Types of Licences

Created by UPRC using TinyPPT and adapted from "Why do we need to license?" by European Commision, licensed under CC BY-NC-SA 4.0.

Source: https://data.europa.eu/elearning/en/module4/#/id/co-01

Open Data Commons of the Open Knowledge foundation have defined licenses specific to data to help users publish, provide and use open data:

- Open Data Commons Open Database License (ODbL)

- Open Data Commons Attribution License

- Open Data Commons Public Domain Dedication and License (PDDL)

To help you select the right licence for your data, the European portal provides a Licensing Assistant including a description of the available licences, an overview of how to apply licences as re-publisher/distributor of Open Data as well as how to combine multiple licences.

The licences need to be easy to locate and read, as seen in the below example from the data.gov.uk.

Image 4 Example of dataset from data.gov.uk

Now it's your turn. Search and access your country's government site with open data, by entering data.gov.[country top-level domain], e.g. for the UK it is the data.gov.uk.

5. **Quick check**

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. Without a licence the data cannot be truly

   - accessible.

   - **open.**

   - reliable.

2. For an open licence,

   - **the simpler the licence, the easier it will be for the reuser to mix it with other datasets.**

- the more complicated the licence, the more purposes it covers.

3. What is the most suitable type of licence for data of a publisher or an individual?

   - **The creative commons attribution licence.**

   - A bespoke or custom-made licence.

   - No need for a licence.

4. The licences need to be easy

   - to modify.

   - **to locate.**

   - to use.

6. Achieving impact with open data

The goal of all open data initiatives is to have some kind of impact at the governmental, social, environmental and economic levels. As per Open Data Institute "Impact is a key part of measuring the effectiveness of an open data policy, programme or initiative". Nevertheless, measuring this concrete impact properly remains a serious challenge, given its complexity.

The indicators provided by the Open Data Maturity Study (European Commission, n.d. -e). enable us to gain insights into the development achieved in the field of open data in Europe. It assesses the level of maturity against four dimensions: policy, portal, impact, and quality.

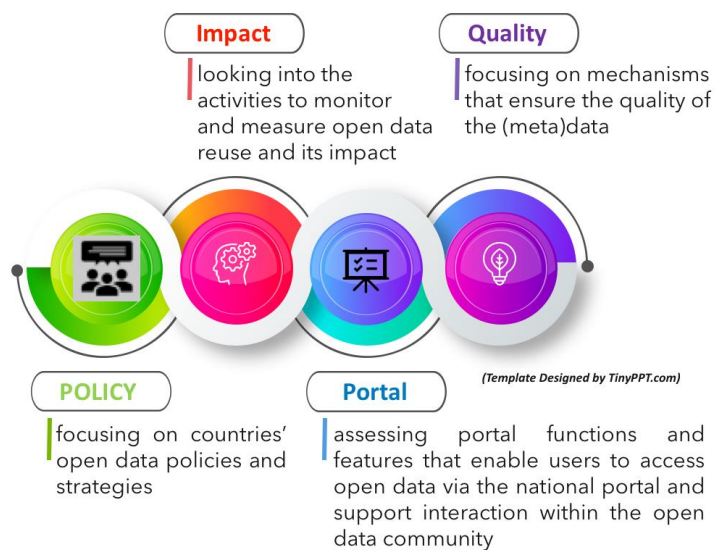**Image 5 Maturity assessment against four open data dimensions**

Image: Maturity assessment against four open data dimensions

Created by UPRC using TinyPPT and adapted from "Open Data Maturity Report 2022" by Carsaniga et al., licensed under CC BY-NC-SA 4.0.

Source:
https://data.europa.eu/sites/default/files/data.europa.eu_landscaping_insight_report_n8_2022_1_0.pdf

The Open Data Maturity assessment 2022 , which is the eighth consecutive annual report by data.europa.eu, "aims to help participating countries to better understand their level of maturity, to capture their progress over time, to find areas for improvement and benchmark their maturity against other countries. Additionally, the study provides an overview of best practices implemented across Europe that could be transferred to other national and local contexts" (Carsaniga et al., 2022).

In parallel, the "Use Case Observatory, an initiative led by data.europa.eu, serves as comprehensive research aimed at evaluating the impact of open data across Europe between 2022 and 2025. This project focuses on analysing 30 reuse cases and aims to contribute with valuable insights to the broader goals of data.europa.eu while shedding light on the challenges and successes of open data reuse and impact assessment methodologies" (data.europa.eu, 2024; opendata.ellak.gr, 2024)

Moreover, the Open Data Census by the Open Knowledge Foundation gives an overview of the high amount of publicly available data and it is used to compare the progress made by different cities and local areas in releasing Open Data.

The Open Data Barometer provides a global measure of how governments are publishing and using open data for accountability, innovation and social impact. The Open Data Barometer Global Report ranks 92 countries on Readiness, Impact and Implementation. This report also presents interesting examples of case studies in the media and academic literature.

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7. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. Which dimension looks into the EU country's activities to monitor and measure open data reuse, so as to assess the development achieved?

   Policy

   Portal

   Efficiency

   Impact

   Quality

2. T/**F**: The Open Data Maturity assessment reports aim to make EU countries' governments accountable.

3. The Open Data Barometer Global Report ranks 92 countries on (Select all that apply):

   Readiness

   Policies

   National Portals

   Impact

   Open Data Policies

   Implementation

4. **T**/F: The Open Data Census is used to compare the progress made by different cities and local areas in releasing Open Data.

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8. How to find open data?

[Gregory et al. (2018)](#) describe 11 quick tips that can be very useful in finding the data you are searching for.

Image 6 Eleven quick tips for finding research data.

Image: Eleven quick tips for finding research data.

This image is created by [UPRC](#) and adapted from [Gregory et al. (2018)](#), licensed under [CC BY-NC-SA 4.0](#).

Source: [Gregory et al. (2018)](#)

Indicative resources for finding open data for your teaching or for your students to discover open data themselves, are:

- [BASE](#), one of the world's most voluminous search engines that provides more than 300 million documents from more than 10,000 [content providers](#) and

- [re3data.org](#), a global registry of research data repositories that covers research data repositories from different academic disciplines and is also recommended in the European Commission's "[Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020](#)" (European Commission, 2017).

- [FAIRsharing](#) a curated, informative and educational resource on data and metadata standards, inter-related to databases and data policies.

Open data platforms make it simpler to publish, manage and find open data on the Web. Open data platforms provide publishers with a pathway to publish data, guiding them through the process, and in parallel offer users search optimization, consistency and ease of access to discover open data from around the world. There are two different approaches to publishing and exposing open data. An open data catalog is a platform that lists datasets on the Web, like directories, while in the open data management platforms publishers can update data directly in the platform and provide updates on a regular basis (European Commission, n.d. -c)

World Bank Open Data is an Open Data Catalog with an extensive list of of available World Bank datasets.

You may also review Ten sources of free big data on Internet

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9. **Quick check**

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. **T**/F: According to tip 8 of Gregory et al. (2018) for finding data, the data you seek may be provided as a service through an API, such as Google Earth Engine (https://earthengine.google.com).

2. How can publishers update their data directly in a platform on a regular basis?

   ● Using an open data catalog.

   ● **Using an open data management platform.**

3. **T**/F: An open data catalog is a platform that lists datasets on the Web, like directories.

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10. **Existing open data initiatives**

National Oceanic and Atmospheric Administration US scientific agency provides publicly available resources for educators (e.g. classroom-friendly lesson plans, activities, and curricula) focusing on ocean and atmosphere data that are easy to use and are appropriate for classrooms and informal learning environments.

UK Data Service includes the UK's largest collection of economic, population and social research data for teaching, learning and public benefit. It enables accessing and sharing of real research datasets to support teaching and learning. There are dedicated sections for

- [Teaching resources](#)

- [Teaching ideas](#)

- [Data skills modules](#)

- [Case studies](#)

EDC's Oceans of Data Institute (ODI) is dedicated to transforming education to help people succeed in school, work, and life in a data-intensive world. It envisions a world where everyone has the skills and knowledge to make informed decisions and achieve new insights and understandings using data. EDC's Oceans of Data Institute (ODI) has compiled a list of data activities, lessons, and resources for the classroom, sorted by grade level: [Resources for Educators Using Data in the Classroom](#).

11. Educational data

Educational data comprises a wide range of datasets about learners, their learning and the environments in which they learn, stored in various sources ([Shacklock, 2016](#)), e.g. in online and blended teaching and learning environments. Data is collected from explicit learners' activities, such as completing assignments and taking exams, and from tacit actions, including online social interactions, extracurricular activities, posts on discussion forums, and other activities that are not directly assessed as part of the learner's educational progress ([Bienkowski et al., 2012](#))

In the school context, educational data can be broadly defined as: *"information that is collected and organised to represent some aspect of schools. This can include any relevant information about students, parents, schools, and teachers derived from qualitative and quantitative methods of analysis."* ([Lai & Schildkamp, 2013, p. 10](#))

As this definition suggests, educational data is not restricted to students' grades in national exams and standardised tests (although that is a common misconception).

As presented on the next figure and this [infographic](#) by the Data Quality Campaign project, the educational data commonly used can be classified in two types: Static and Dynamic Data.
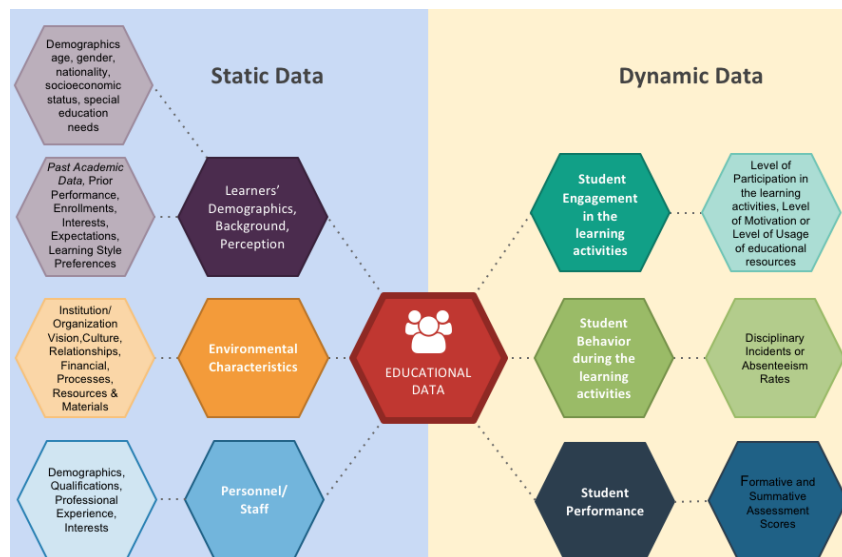
Image 7 Static and dynamic educational data

Image: Static and dynamic educational data by [Mougiakou et al. (2023)](#) Fig. 1.14 pg. 37 is licensed under [Creative Commons Attribution 4.0 International License](#)

Source: https://link.springer.com/book/10.1007/978-3-031-15266-5

Static data, refers to data which can remain unchanged for large periods of time. According to [Shacklock (2016)](#), it is the data *"which is collected, recorded and stored by institutions and traditionally includes student records, staff data, financial data and estates data"*. As [Shacklock (2016)](#), points out *"Static data has always been a strategic asset for both institutions and government. It informs all operational and business decision-making and planning in an institution, and indicates to government and the public how the sector is performing as a whole."*

Dynamic data refers to data generated at a more frequent rate and they are mainly related to learners' activities during the learning process. Such data is usually collected by the e-tutors, classroom teachers typically through Learning Management Systems. If we manage to collect, link and analyse dynamic data, then we can probably get an instant, accurate view of how an individual learner or a group of learners is performing.

[Lai and Schildkamp](#) (2013, p. 11-12) have extended [Ikemoto and Marsh's](#) (2007) categories of educational data, to input data, context data, process data and outcome data. Each category indicates when data will be collected. The following figure presents examples of educational data for each category.

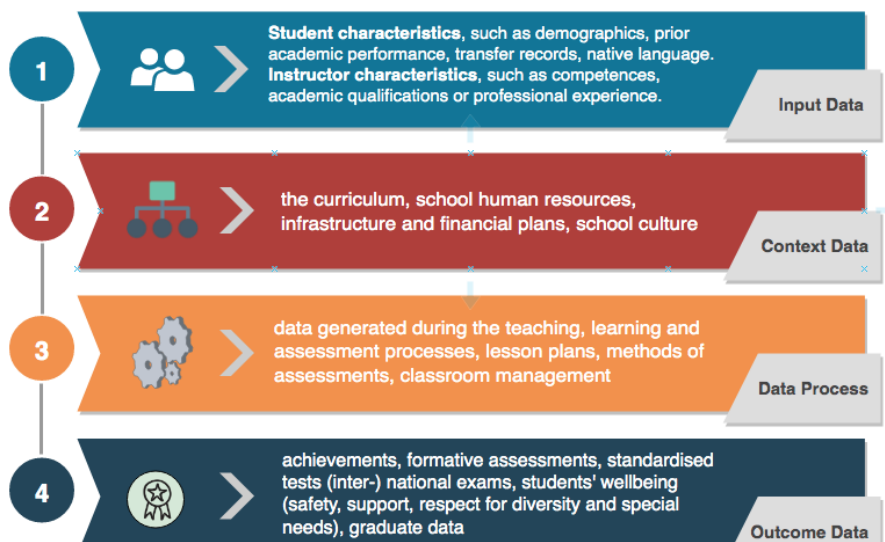**Image 8 Examples of educational data for each category**

1	**Student characteristics**, such as demographics, prior academic performance, transfer records, native language. **Instructor characteristics**, such as competences, academic qualifications or professional experience.	Input Data
2	the curriculum, school human resources, infrastructure and financial plans, school culture	Context Data
3	data generated during the teaching, learning and assessment processes, lesson plans, methods of assessments, classroom management	Data Process
4	achievements, formative assessments, standardised tests (inter-) national exams, students' wellbeing (safety, support, respect for diversity and special needs), graduate data	Outcome Data

Image: Examples of educational data for each category by Mougiakou et al. (2023) Fig. 1.15 pg. 38 is licensed under Creative Commons Attribution 4.0 International License

Source: https://link.springer.com/book/10.1007/978-3-031-15266-5

Page adapted from Mougiakou et al. (2023)

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12. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. Educational data about personnel's professional experience, learner's background, prior performance as well as resources and materials is classified as

    ● **static data**

    ● dynamic data

2. According to Lai and Schildkamp (2013) the educational data concerning "Discussions with the learners about their strengths and weaknesses in reading comprehension" is categorised as:

    ● input data,

    ● context data,

- **process data,**
- outcome data,

3. According to [Lai and Schildkamp (2013)](#) the "Examination of the school curriculum to determine whether the reading texts are engaging for students." is categorised as:
    - input data.
    - **context data.**
    - process data.
    - outcome data.

4. T/**F**: If we manage to collect, link and analyse static data, then we can probably get an instant, accurate view of how an individual learner or a group of learners is performing.

5. As per this [infographic](#) by the Data Quality Campaign project, the requirements that must be met for educational data, so as to to form a full picture of student learning include (Select all that apply):

    Accuracy

    Relevancy

    Availability

    Scalability

    Validity

<Next page>

13. How to create (collect, clean and curate) an open educational dataset?

Educational Data is everywhere. To inform our decisions and benefit from them, we need to **collect the necessary data**.

There are **numerous data sources of learners' information** available:

- data stored in institutional student information systems, e.g. high school grades, socio-economic status, citizenship and immigration status, parents' education and language skills,
- trace data recorded within Learning Management Systems and other online learning environments such as e-libraries and virtual labs,
- data from systems that analyse discussion in online forums,

- survey data (e.g., questionnaires).

The next figure summarises indicative educational data sources that store data from various sources:
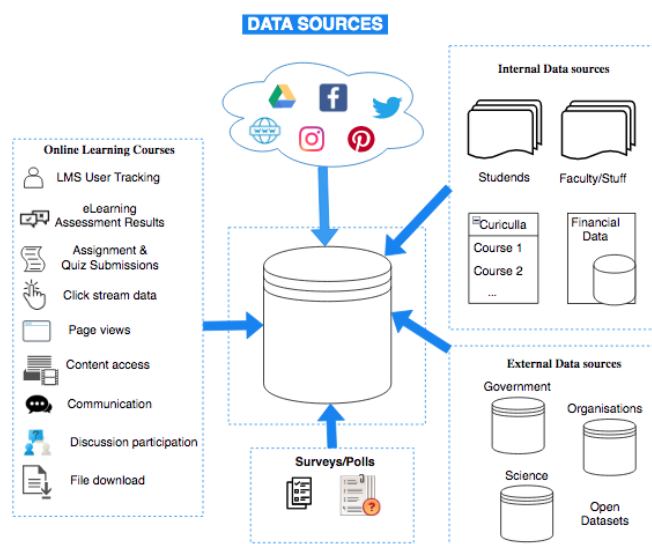
Image 9 Indicative educational data sources

Image: Indicative educational data sources by [Mougiakou et al. (2023)](#) Fig. 1.19 pg. 47 is licensed under [Creative Commons Attribution 4.0 International License](#)

Source: https://link.springer.com/book/10.1007/978-3-031-15266-5

[School of Data](#) distinguishes three basic ways of getting hold of data:

1. Finding data – this involves searching and finding data that has already been released e.g. through open data repositories, such as [OECD Online Education Database](#).

2. Getting hold of more data – asking from official sources to release 'new' data, e.g. through [Freedom of Information requests](#).

3. Collecting data, yourself – This means gathering data through:

   - surveys and polls

   - internal data sources, like Institutions' Management Information Systems and/or Students Information Systems.

- online educational environments, such as LMSs, MOOCs, ITSs which record any learner activity involved, such as reading, writing, taking tests, performing various tasks and commenting with peers.

In order to combine data from different sources and in different formats, for example performance data, attendance records, past academic data and forum participation data, into a single database, it is essential to use aggregation and integration. **Aggregation** is the process of grouping together the same type of data from different organisations/institutions and **integration** is the process that groups different types of data from the same organisation/institution. Romero et al. (2014) state that "*the goal of data aggregation/ integration is to group together data from multiple sources into a coherent recompilation, normally into a database*" .

Since educational data comes from various sources, it could be really messy. It may come in diverse formats and it may contain various types of inaccuracies. Thus, it is essential to know the most common quality issues of raw educational data and understand the data cleaning methods for educational datasets.

The video below examines the most common discrepancies in data.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 1 Quality issues of raw educational data

Quality issues of raw educational data

Video: Quality issues of raw educational data [3:00]

This video is created by UPRC and is adapted from Educational Data Analytics for Teachers and School Leaders by Mougiakou et al. (2023), licensed under CC BY-NC-SA 4.0.

After discussing the imperative process of **Data Cleaning**, it is pretty easy to understand why **Data Curation** is **attributed with great importance in educational data management**, in order to transform raw data into consistent data that can then be analysed. According to ICPSR, "*Through the curation process, data are organized, described, cleaned, enhanced, and preserved for public use, much like the work done on paintings or rare books to make the works accessible to the public now and in the future. Without curation, however, data can be difficult to find, use, and interpret.*"

<div align="center">(Page adapted from Mougiakou et al. (2023))</div>

<div align="center">**<Next page>**</div>

14. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. Select the data which is stored in an Institutional Student Information System. (Select all that apply):

   Grades

   National/Regional Students' academic achievements

   Program Participation

   Demographics

   Clickstream data

   Number of posts in the discussion forum

   Parents education

2. You wish to retrieve students' information from the Student Information System and combine it with data from the Learning Management System, in order to study the factors that affect student's participation in the online course you prepared. The process that groups different types of data from the same organisation/institution is called:

   - Aggregation

   - **Integration**

3. You have collected data from the Learning Management System and you realise that some users accessed your course just once (in error or in order to see one specific resource or to do an activity) but never returned to the course later. What would you decide to do in order to handle the missing values?

   - To use a label, like "null" (unspecified), or "?" (missing)

- To use a substitute value like the attribute mean or the mode

- To fill in the missing value, by determining what is the most probable value using regression.

- **To remove these learners from the dataset.**

15. How to distribute (metadata, interoperability) open educational datasets?

Metadata is usually defined as "data about data". Johnson, L.R., et al. (2018) provide the following definition about metadata *"It is information about a data set that is structured (often in machine-readable format) for purposes of search and retrieval. Metadata elements may include basic information (e.g., title, author, date created) and/or specific elements inherent to data sets (e.g., spatial coverage, time periods)."*

However, in the context of education, metadata can more aptly be defined as tags used to describe educational assets.

Metadata **helps**:

- to organize,

- find and

- understand data

Metadata **answers** the following questions about data:

- Who created it?

- What is it?

- When was it created?

- How was it generated?

- Where was it created?

- How may it be used?

- Are there restrictions on it?

Practical examples of metadata: https://dataedo.com/kb/data-glossary/what-is-metadata

In Understanding Metadata 2017, from the National Information Standards Organization, Riley J. distinguishes the three types of metadata (see Figure 4.5.14):

- Descriptive metadata
- Administrative metadata
- Structural metadata

Descriptive metadata can describe a learning asset or resource related to education — including learning standards, lessons, assessment items, books, etc. — for purposes such as identification, search and discovery. Descriptive metadata can be thought of as a keyword or tag on an asset that makes it easier to find. Examples include subject, grade level, and related skills and concepts.

Administrative metadata is used to manage a learning asset. Examples of this type of metadata include status, disposition, rights and licensing.

Structural metadata describes how data is organized or formatted and is often governed by a widely-adopted standard that ensures the data is accurately represented when exchanged and presented. Structural metadata enables content to be machine readable.
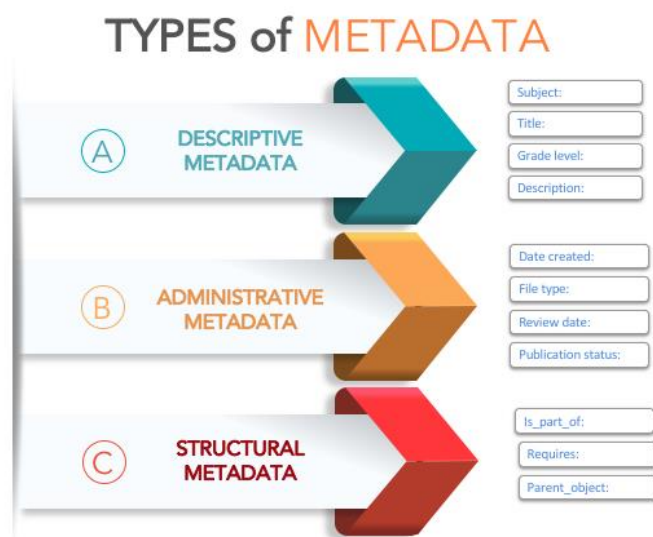
Image 10 Types of metadata

Image: Types of metadata by Mougiakou et al. (2023) Fig. 2.8 pg. 73 is licensed under Creative Commons Attribution 4.0 International License

Source: https://link.springer.com/book/10.1007/978-3-031-15266-5

Metadata are used for the **purposes** of:

- **Discovery of information**

- **Identification of a resource**

- **Interoperability, exchange of content between systems**

- **Digital-object management i.e., deliver the appropriate version.**

- **Preservation helps signaling when preservation actions should be undertaken**

- **Navigation within parts of items**

The video from the National Archives of Australia "Meta… What? Metadata" helps us understand the importance of metadata in order to describe, use, find and manage content and data.

Metadata of a dataset is of critical importance to achieve data interoperability. The National Information Standards Organization describes "*data interoperability, as the effective exchange of content between systems. Interoperability relies on metadata describing that content so that the systems involved can effectively profile incoming material and match it to their internal structures*."

According to the OpenMed project "Interoperability denotes the ability of diverse systems and organisations to work together (inter-operate). In this case, it is the ability to interoperate – or intermix – different datasets." As the OpenMed project emphasises, "interoperability is absolutely key to realising the main practical benefits of "openness": the dramatically enhanced ability to combine different datasets together and thereby to develop more and better products and services."

(Pages adapted from Mougiakou et al. (2023))

Now that our dataset is created, organised, cleaned and described, in order to open it up we need to proceed with some final steps:

1. **Apply a suitable open license.** We discussed open licences in section 4.

2. **Make the data available in a useful format**. In order to share your open data, making your dataset simply managed and easy to re-use you need to choose the right format. Comma Separated Values (CSV) is an open, simple to understand and machine-readable format for sharing open data. A CSV file is simply lines of data, with each data point separated from the next by a comma. CSV files can be easily loaded into and saved from applications like Excel, making it accessible to users (European Commission, n.d. -a). You can get an overview on file formats by visiting Open Data Handbook File Formats (Open Knowledge Foundation). An alternative option to consider is making data accessible through an API (Application Programming Interface) connected to a database that updates in real-time.

3. **Make the data discoverable**. There are various ways to make your data openly discoverable so that for example, it can be easily accessed by your students. You may upload your data to the data repository of your institution, a domain-specific portal in your discipline, or even in a generic data repository. BASE, re3data.org and FAIRsharing are quite popular registries/lists in searching repositories for sharing your data.

To further assist you in the publishing process of your data, you may also visit CKAN, the well known open-source DMS (data management system) for powering data hubs and data portals and the Open Data Repository's Data Publisher that "allows researchers, graduate students, and the general public to quickly create database structures and publish data on the web".

16. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. T/**F: Descriptive metadata** describes how data is organized or formatted.

2. T/**F: Administrative metadata** enables content to be machine readable.

3. You are prompted to retrieve the metadata for moodle.org homepage (e.g. using Mozilla Firefox web browser via Main Meu > Tools > Page Info). What is the title of the page?

   a. **Moodle - Open-source learning platform | Moodle.org**

   b. Moodle - Open-source learning management system | Moodle.org

   c. Moodle - Free Software learning platform | Moodle.org

4. T/**F:** Interoperability denotes the ability of grouping together the same type of data from different organisations/institutions.

17. Leveraging educational data to improve teaching, learning and assessment

Educational data can support us, the educators, in developing a better understanding of our learners' activities, behaviour and preferences, by identifying patterns and trends in the data that, in turn, can help us predict possible future outcomes and take actions for improving the learners' experience in our courses (Bienkowski et al., 2012; Lang et al., 2017; Sergis & Sampson, 2017). Thus, educational data enables reflective practice and in parallel it empowers educators to provide data-driven, targeted and timely feedback and support to learners, as well as to offer targeted guidance and assistance, via a personalized approach.

On the other hand, data could potentially enable learners to take control of their own learning (self-regulated learning). When appropriately delivered, data can provide learners with better insights about their current academic performance in real-time, about their progress (also in comparison to their peers) and recommendations about what they need to do for meeting their learning goals and help them to make informed, data-driven choices about their studying (Sclater, Peasgood, & Mullan, 2016). Moreover, the effective data use enables personalised learning tailored to students' preferences and interests, increasing students' engagement by meeting the individual needs of the growing diverse student cohort.

With regards to institutions, national policies and requirements for external accountability brought to the forefront the importance to ground decisions based on data and evidence, aiming to boost the effectiveness and the efficiency of the education systems (Dunlap & Piro, 2016; Mandinach & Gummer, 2016).

The figure below summarises the key benefits of Educational Data for Students, Educators and Institutions.

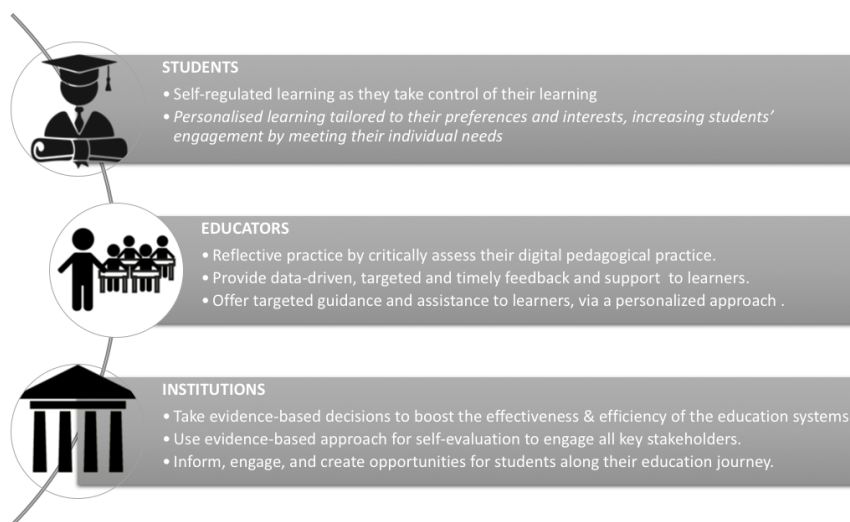**Image 11 Key benefits of Educational Data for Students, Educators and Institutions**

STUDENTS
• Self-regulated learning as they take control of their learning
• *Personalised learning tailored to their preferences and interests, increasing students' engagement by meeting their individual needs*

EDUCATORS
• Reflective practice by critically assess their digital pedagogical practice.
• Provide data-driven, targeted and timely feedback and support to learners.
• Offer targeted guidance and assistance to learners, via a personalized approach .

INSTITUTIONS
• Take evidence-based decisions to boost the effectiveness & efficiency of the education systems.
• Use evidence-based approach for self-evaluation to engage all key stakeholders.
• Inform, engage, and create opportunities for students along their education journey.

Image: Key benefits of Educational Data for Students, Educators and Institutions

This image is created by UPRC and is licensed under CC BY-NC-SA 4.0.

The Data Quality Campaign, in the video "Data is Power", highlights the importance of collecting and using quality data to transform education. Nevertheless, the provision of educational data by itself does not automatically lead to improved teaching and learning. Appropriate analyses and sensemaking of educational data allow us to identify

actionable insights and inform decision making. Data-Driven Decision Making is about that.

Data-driven decision making (DDDM) is defined as *"the systematic collection, analysis, examination, and interpretation of data to inform practice and policy in educational settings"* ([Mandinach, 2012](#)).

Data-driven decision making has become an essential component of educational practice in order to ground decisions based on data and evidence. **Data-Driven Decision Making (DDDM)** crosses all levels of the educational system and uses a variety of data from which decisions can be made. Therefore, it can be challenging to engage in DDDM due to data being siloed in different sources and at different levels.

Developing **competences for effective** DDDM is essential for education professionals. Such competences require "to effectively transform information into actionable knowledge and practices by collecting, analyzing, and interpreting all types of data." ([Ridsdale et al., 2015](#)).

Data is not a static entity and therefore decisions based on data should not be static either. Data usage and evaluation should be continuous and integrated into existing decision-making processes as the figure below portrays.

Image 12 From problem identification to informed decision making

==Image==**: From problem identification to informed decision making by [Mougiakou et al. (2023)](#) Fig. 1.3 pg. 6 is licensed under [Creative Commons Attribution 4.0 International License](#)**

Source: https://link.springer.com/book/10.1007/978-3-031-15266-5

Data analytics refers to methods and tools for analysing large sets of different types of data from diverse sources, to support and improve decision-making. Data analytics are mature technologies that are currently applied in real-life financial, business and health systems.

Over the last decade data analytics have also been considered in education ([Johnson et al., 2011, p.28-30](#)), first in higher education, and then in school education ([Bienkowski et al., 2012](#)).

The video "[How Data Help Teachers](#)", from the Data Quality Campaign, demonstrates how data helps school teachers and their students succeed. For more details, you may also review the corresponding [infographic](#), "Ms. Bullen's Data-Rich Year" by DQC.

This video from the Data Quality Campaign, "[Data Can Help Every Student Excel](#)" also discusses what it means to use data in service of student learning, taking the stand that

data is one of the most powerful tools to inform, engage, and create opportunities for students along their education journey.

Page adapted from [Mougiakou et al. (2023)](#)

18. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. **T**/F: The provision of educational data by itself does not automatically lead to improved teaching and learning.

2. What is the final step for Data-Driven Decision Making?

   - Transform Information into Decisions
   - Collect Required Data
   - Identify Problems
   - **Evaluate Decisions**
   - Frame Questions
   - Transform Data into Information

3. Data-Driven Decision Making (DDDM) (Select all that apply):

   crosses specific levels of the educational system.

   uses a variety of data from which decisions can be made.

   has become an essential component of educational practice in order to ground decisions based on data and evidence.

4. T/**F**: **Data analytics** refers to methods and tools for analysing large sets only of open data that cannot be applied in the education field.

19. GDPR and educational data

Along with the emerging opportunities offered, education data-driven practice and assessment raise challenges such as ethical issues and implications especially in terms of privacy, security of data and informed consent that should be addressed via transparent and well-defined ethical policies and codes of practices ([Mougiakou et al., 2023](#)).

Open Data Institute (ODI) defines Data Ethics as "a branch of ethics that evaluates data practices with the potential to adversely impact on people and society – in data collection, sharing and use."

 The video "Introduction to data ethics" introduces the basic principles of data ethics.

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 2 Introduction to data ethics

Video: Introduction to data ethics [3:23]

Introduction to data ethics by Odyssey Learning Project is licensed under a

Creative Commons Attribution license (reuse allowed)

Source: https://www.youtube.com/watch?v=I-k_1RQmmVY

As Pentland states when describing Big Data, "the ability to track, predict and even control the behaviour of individuals and groups of people is a classic example of Promethean fire: it can be used for good or ill" (Pentland, 2013).

Several frameworks, policies and guidelines have been developed to help institutions and educators to identify potential ethical issues and to apply clear ethical policies that govern the use of educational data, including JISC's code of practice in 2015 (updated in 2018), the LACE (Learning Analytics Community Exchange) framework in 2016 and the ICDE (International Council for Open and Distance Education) Global guidelines in 2019. New regulations, like the GDPR (General Data Protection Regulation) have raised awareness of data ethics issues that can arise from data misuse (Mougiakou et al., 2023).

The following video provides an overview of the European Union data protection rules, also known as the EU General Data Protection Regulation (or GDPR), that applies since

25 May 2018 to all entities who collect, store and process any personal data belonging to EU citizens and residents (even organisations that are not EU-based). There are six lawful bases for processing data under GDPR. In the education context, the most relevant is the lawful basis public task, which means that institutions use the data to perform a task in the public interest. The video also presents the individuals' rights so as to have control over their personal data, under GDPR. The GDPR introduces stronger rights for data subjects and creates new obligations for data controllers (the person or body handling the personal data). To exercise individuals' rights, they should contact the company or organisation processing their personal data, also known as the controller. If the company/organization has a Data Protection Officer ('DPO') they may address their request to the DPO. The company/organisation must respond to their requests without undue delay and at the latest within 1 month.

Video 3 GDPR Lawful Bases. Key Rules & Individual Rights - UPRC Video

GDPR
Lawful Bases, Key Rules
&
Individuals' rights

Video: GDPR Lawful Bases. Key Rules & Individual Rights - UPRC Video [4:49]

This video GDPR Lawful Bases. Key Rules & Individual Rights by UPRC is created by UPRC and is adapted from Educational Data Analytics for Teachers and School Leaders by Mougiakou et al. (2023), licensed under CC BY-NC-SA 4.0.

GDPR has strengthened the conditions for consent (GDPR.eu, 2019). Informed consent is declared by most international guidelines as one of the pivotal principles in Data Ethics. According to Griffiths et al. (2016) "Informed consent refers to the requirement for an individual to give consent for the collection and analysis of the data which they generate."

As per European Commission guidelines about GDPR (European Union, 2018), "when a company or organisation asks for consent to collect or reuse personal information, the data subjects have to make a clear action agreeing to this, for example by signing a consent form or selecting yes from a clear yes/no option on a webpage"…"It is not enough to simply opt out, for example by checking a box saying they don't want to receive marketing emails. They have to opt in and agree to their personal data being stored and/or re-used for this purpose."

The way individuals are informed is crucial for the informed consent process. We should ensure that they fully realize the expected consequences of granting or withholding consent.

As depicted in the figure below a consent request must be specific, unambiguous, clearly distinguishable, presented in a clear and concise way, using easy to understand language, specifying the data use and including the respective contact details of the organization processing the data.
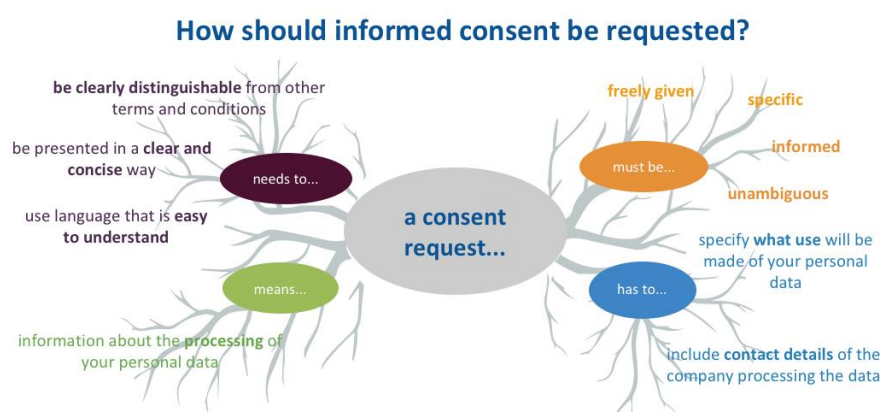
Image 13 Conditions for informed consent

Image.: Conditions for informed consent by Mougiakou et al. (2023) Fig. 2.16 pg. 95 is licensed under Creative Commons Attribution 4.0 International License

Source: https://link.springer.com/book/10.1007/978-3-031-15266-5

With regards to the collection of personal data about children, additional protection should be granted since children are less aware of the risks and consequences of sharing data and of their rights.

Under GDPR, any information addressed specifically to a child should be adapted to be easily accessible, using clear and plain language. For most online services (social networking sites) the consent of the parent or guardian is required in order to process a child's personal data on the grounds of consent up to a certain age. The age threshold for

obtaining parental consent is established by each EU Member State and can be between 13 and 16 years, according to the National Data Protection Authority.

Now that we have a better understanding of the GDPR key rules, in the next video we will further review the main categories of personal data as defined by GDPR. We will also go through the main challenges that institutions should be taken under consideration to comply with GDPR, since within the context of education, there are quite different approaches relating to the processing of learners' data, according to national guidelines (when available).

The transcript and MP4 file may be downloaded from the folders: Videos for download and Transcripts for download.

Video 4 GDPR Main Categories of Data & Challenges to face

GDPR
Main Categories of data
&
Challenges to face

Video: GDPR Main Categories of Data & Challenges to face - UPRC Video [**3:43**]

This video GDPR Main Categories of Data & Challenges to face is created by UPRC and is adapted from Educational Data Analytics for Teachers and School Leaders by Mougiakou et al. (2023), licensed under CC BY-NC-SA 4.0.

As presented in the video, data-related activity can still be lawful, by complying with legal obligations e.g. GDPR, even though it may be considered that data is not treated ethically. Sclater (2017) also argues that "*consent is required for use of sensitive data and in order to take interventions directly with students on the basis of the analytics. This implies that if the data in question are not considered 'sensitive', and do not form the basis for any intervention, consent is not required (on the basis that this may be considered as of legitimate interest)*".

Only once data is truly anonymised and does no longer contain any identifying elements, the anonymisation is irreversible and individuals are no longer identifiable, the data will not fall within the scope of the GDPR and it becomes easier to use. Nevertheless, before anonymization, we should consider the purposes for which the data is to be used. Anonymisation may devalue the data, so that it is no longer useful for specific purposes.

The ICO's Code of Conduct on Anonymisation provides further guidance on anonymisation techniques (UCL,2018). Unlike anonymisation, in pseudonymised data personally identifiable material is replaced with artificial identifiers. Pseudonymised personal data can still fall within scope of the GDPR, depending on how difficult it is to attribute the pseudonym to a particular individual. Whether 'de-identified' or pseudonymised data is in use, there is a residual risk of re-identification. Anonymised data can rather easily be de-anonymised when they are merged with other information sources. (Drachsler & Greller, 2016).

Thus, the protection of the rights and freedoms of natural persons with regard to the processing of personal data require that appropriate technical and organisational measures are taken which meet in particular the principles of data protection by design and data protection by default.

<div align="center">(Page adapted from Mougiakou et al. (2023))</div>

<div align="center">**<Next page>**</div>

20. Quick check

Test your understanding with this quick check. The grades are not stored, so you can try as often as you like.

1. **T**/F: EU General Data Protection Regulation (or GDPR), apply since 25 May 2018 even to organisations that are not EU-based, as long as they collect, store and process any personal data belonging to EU citizens and residents.

2. T/**F**: When individuals give consent for the collection and analysis of the data which they generate, they cannot refuse or withdraw their consent.

3. T/**F**: The lawful basis (public task basis) is appropriate in order to take interventions directly with students on the basis of the participation data recorded within the Learning Management System.

4. Select the appropriate individual right under GDPR. When you type your name into an online search engine, the results include links to an old newspaper article about a debt you paid long ago.

   - Right to Restrict Processing`
   - Right to Data Portability

- **Right to be Forgotten**

- Right to be Informed

5. Select the appropriate individual right under GDPR. You apply for a loan with an online bank. You are asked to insert your data and the bank's algorithm tells you whether the bank will grant you the loan and gives the suggested interest rate.

    - **Rights related to Automated Decision Making**

    - Right of Access

    - Right to Restrict Processing`

    - Right to Data Portability

6. Select the appropriate individual right under GDPR. You bought two tickets online to see your favorite band play live. Afterwards, you're bombarded with adverts for concerts and events that you're not interested in. You inform the online ticketing company that you don't want to receive further advertising material.

    - Rights related to Automated Decision Making

    - **Right to Object**

    - Right to be Forgotten

    - Right to be Informed

Page adapted from [Mougiakou et al. (2023)](#)

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<End of Book>

Tasks: Open Data in Education

Try these tasks to extend your Open data in education skills:

1. You are prompted to visit the 3 directories of repositories BASE, re3data.org, FAIRsharing as well as the Open Data Catalog World Bank Open Data and the Open Data Platform OpenDataMonitor. Compare the user experience, ease of access and discoverability when searching for open data. Retrieve and download an open dataset of your interest.

2. Let's now assess the level of Open Data Maturity for your country for 2022.

   a. Start by visiting your country's Open Data Government site, by entering data.gov.[country top-level domain], e.g. for UK it is the data.gov.uk Review the available datasets.

   b. Afterwards, visit the Open Data Maturity, see your country's overview graph and access the file with the detailed view. Study your country's Maturity Level Rating, its clustering, as well as its performance against the four dimensions: policy, portal, impact, and quality. You may also review the Open Data Maturity assessment 2022.

   c. Now create an infographic presenting your main findings including areas for improvement and benchmark their maturity against other countries

3. Open data encompasses more than just making it accessible online. You are requested to visit the website of Tim Berners-Lee's 5-Star Open Data plan. You may review the definition and example for each level and study the costs and benefits. Then, attempt to assess the openness of a dataset you found online, using one of the presented repositories, starting with the first star and rate each level sequentially.

4. As a tutor of an online course, you want to collect data to enhance your learners' participation in the course. Define the questions you need to answer and the data you will need to collect. Create a data plan based on the 11 tips described by Gregory et al. (2018) to retrieve open data on your subject area. Please focus on either your past experience or your thoughts for future actions.

5. Write down how you are using the data you are currently collecting for your courses. Do you use this data to make decisions and take actions? Do you use it to identify patterns and trends so as to understand your learners' activities, behaviour and preferences? Do you use it to inform the design of your courses improving the learners' experience?

6. In order to confirm that you selected the appropriate lawful basis in the previous task, you are requested to visit this interactive guidance tool to help you clarify any questions you may have.

7. Visit the [European Commission website](#) and create an infographic presenting the main principles of the General Protection Data Regulation.

Checklist: Open Data in Education

When you feel you understand the following aspects of Open data in education, select 'I can do these'.

1. **I can describe** the key features and kinds of open data and **explain** why we need open data

2. **I can list** the open data licences, **explain** their added-value and **select** the right type of licence

3. **I can explain** the four dimensions to assess open data maturity

4. **I can locate** open data sets

5. **I can define** and **categorise** educational data

6. **I can collect** and **manage** an open educational dataset

7. **I can describe** metadata

8. **I can assess** the benefits of open data in teaching and learning and **integrate** open educational data in school practice to achieve impact

9. **I can recognise** the significance of informed consent, individual's rights and educational data protection policies as key Ethical Principles.

○ **I can do this**

Course check

Open Data in Education: Check your understanding (quiz - 10 MCQs)

This quiz will help you to consolidate everything you learnt on this course.

You can take the quiz as often as you like, but you must achieve a minimum 80% pass grade.

Upon completion you will receive a Moodle Academy badge.

1. Open Data (Select all that apply)

    can be intermixed with other datasets.

    must be machine-readable.

    should not be available in a modifiable mode.

    may be restricted to educational purposes.

    cannot be used for commercial purposes.

2. Open data licences include:

    - Creative Common licenses
    - Bespoke Licences
    - Open Government Licences
    - Open Data Commons Open Database License (ODbL)
    - **All the above**

3. In order to gain insights into the development achieved in the field of open data in Europe, the open data maturity study assesses the level of maturity against the dimensions of (Select all that apply):

    Policy

    Accuracy

    Portal

    Efficiency

    Impact

    Quality

4. Open data platforms (Select all that apply)

offer users ease of access to discover open data

require high maintenance cost

are not user-friendly for publishers

provide publishers with a pathway to publish data

5. One of your colleagues has sent you the below photo. Based on its metadata, can you decide if you are eligible to use this image, even for commercial purposes?

- **Yes, as it is released under Creative Commons CC0 into the public domain.**

- No, as I cannot retrieve such info.

6. You have extracted the following dataset containing file downloads data from the school's Learning Management System.

	File1.pdf	File2.pdf	File3.pdf	File4.pdf	File5.pdf
Student1	2	1	0	2	1
Student2	1	3	2	1	1

Student3	9	21	12	17	9
Student4	1	1	2	1	1
Student5	1	0	1	2	1
Student6	1	2	1	1	1
Student7	0	1	2	3	1
Student8	1	1	0	1	2
Student9	1	1	2	1	1
Student1	19	23	17	8	14

You can easily identify two outliers (Student3 and Student10). You need to decide what to do with these outliers, in order to proceed with the data analysis. These outliers:

A.   are errors and should be eliminated in order to proceed.

B.   are true observations and should not be eliminated.

MCQ adapted from Mougiakou et al. (2023)

7. You participate in an International Conference on Teaching and Learning. Therefore, you must prepare a review of students' performance from 6 different countries in three main subjects, namely Maths, English, and Science.

The students' performance data from 6 different countries are collected in the following table.

	Date of Birth	Maths	English	Science	Country
Student1	4/9/2008	95	68	96	USA

Student2	9/18/2008	75	83	88	Italy
Student3	10/19/2009	85	89	92	Greece
Student4	6/19/2010	9,4	9,7	9,1	UK
Student5	9/20/2028	49	60	53	Canada
Student6	26/10/2010	96	79	100	Italy
Student7	8/26/2006	79	-75	69	UK
Student8	5/25/2004	97	83	90	USA
Student9	4/25/2030	100	89	55	Italy
Student1	29/6/2007	67	97	88	Greace

Please examine carefully this table and select the inconsistencies you have identified

A. negative values for students' grades

B. different data formats

C. typos in dates

D. differences in spaces

E. different grades' scale

F. typos in country data

G. differences in capitalisation

MCQ adapted from Mougiakou et al. (2023)

8. Data-Driven Decision Making (DDDM) is about (Select all that apply):

- collecting a huge amount of data

- **grounding decisions based on evidence**

- **informing practice and policy in educational settings**

- **identifying actionable insights from the educational data**

- dealing with overwhelming statistics

9. **T**/F: Under GDPR, educational institutions can still process their students' personal data on the lawful basis of public task and without the need for informed consent, as long as this data is not sensitive and does not form the basis for any intervention.

10. Based on GDPR principles for individuals' rights, you are requested to select your right for the below case. You apply for a new insurance policy but notice the company mistakenly records you as a smoker, increasing your life insurance payments.

- Right of Access

- **Right to Rectification**

- Right to Object

- Rights related to Automated Decision Making

MCQ adapted from Mougiakou et al. (2023)

Feedback

Provide feedback

Please answer these short questions. They should take only a few minutes to complete.

Videos and transcripts for download

Videos for download (Total 24 mins of video)

- GDPR Main Categories of Data & Challenges to face - UPRC Video [3:43]

- GDPR Lawful Bases. Key Rules & Individual Rights - UPRC Video [4:49]

- Introduction to Data Ethics [3:23]

  https://www.youtube.com/watch?v=l-k_1RQmmVY

- Quality issues of raw educational data- UPRC Video [3:00]

Transcripts for download

- **GDPR Main Categories of Data & Challenges to face - UPRC Video Transcript**

- **GDPR Lawful Bases. Key Rules & Individual Rights - UPRC Video Transcript**

- **Introduction to Data Ethics Transcript**

- **Quality issues of raw educational data - UPRC Video Transcript**

Links to External Videos (Total 12 mins of video)

- Meta… What? Metadata [**05:25**] by Commonwealth of Australia (National Archives of Australia) 2019

- Data is Power [**02:33**]by Data Quality Campaign

- How Data Help Teachers [**01:50**] by Data Quality Campaign

- Data Can Help Every Student Excel [**02:00**] by Data Quality Campaign