Open Digital Competences Training for School Educators (OpenDigCompEdu)

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Course: Teaching with Open Digital Tools

English version

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

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Executive Summary

Welcome to Open Digital Tools, a course tailored specifically for educational professionals seeking to enhance teaching and learning through free, open-source digital resources. In this course, you'll explore a wide range of tools designed to support instruction, collaboration, assessment, and content creation without the need for costly software. Whether you're teaching in-person, hybrid, or online, these tools will empower you to create more dynamic, engaging, and accessible learning experiences. By the end of this course, you'll have a comprehensive toolkit to integrate open digital resources into your classroom, improving student engagement and instructional efficiency. In this course you will learn about Open Digital Tools, Open Source Software and the OSS Community.

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Course 2: Teaching with Open Digital Tools

(consists of multiple Modules)

Welcome (40')

About this Course (book)

General discussion forum (forum)

Module 1 - Introduction to open digital tools (3h)

Module 2 - Open digital tools for teaching systems (2h)

Module 3 - Open Digital Tools for teaching communication (3h)

Module 4 - Open Digital Tools for teaching creation (3h)

Certificate of completion (2h)

Post-Quiz Check your understanding

Feedback (20')

Course evaluation survey

Module 1 Introduction to open digital tools

Welcome

Welcome to the Open Digital Tools course, where you will learn about Open Digital Tools, Open Source Software and the OSS COmmunity.

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.

1. Course overview

Aim

In this course you will:

- Explore the concept and attributes of Open Digital Tools
- Identify the principles of the 5 Rs
- Inspect the legal and technical barriers to Open Source Software
- Recognise examples of OSS Communities
- Learn the steps to formulate and distinguish Open Licences

Estimated time

The estimated time to complete this course is 3 hours.

2. Learning outcomes

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

- Define Open Digital Tools, Open Source software, Open Licences and the role of OSS Communities and use these to formulate an OER adoption strategy in school practice. More specifically you will be able to:
  - **describe** the Open Digital Tools, as well as Open Source Software and Open Licences
  - **list** the principles of the 5 Rs
  - **develop** a learning material using a variety of Open Source Frameworks
  - **identify** the merits and challenges of using Open Digital Tools

- **identify** and use Open Licences
- **Identity** and use Open Digital Tools for teaching communication
- **formulate** an OER adoption strategy in school practice

3. Course structure

- This is a free, self-paced course provided by Moodle Academy.
- You must have an editing teacher role in a Moodle course in a Moodle site. If your organisation cannot offer you a course, then follow the instructions in the page Get a practice course.
- This course is facilitated, you are welcome to ask any questions in the General discussion forum.
- We would love to hear what you think of the course, if anything is unclear, or you have any ideas for improvements. Please provide feedback so we can improve the course for everyone.

4. Completion and assessment

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

- View 'About this course' book.
- Achieve 70% or more in the ' Course pre-check: What do you already know?'.
- View the 'Tutorial: Open Digital Tools', reading all sections.
- View the 'Tasks: Open Digital Tools', trying out the suggestions.
- Complete the 'Checklist: Open Digital Tools', confirming your understanding.
- Achieve 80% or more in the 'Open Digital Tools: Check your understanding' quiz.

Completing the activities

- Some activities are automatically marked as completed based on specific criteria. These activities have a checkbox with a dashed line border. 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.

5. Digital competences

This module relates to the following competence(s) of the Digital Competence Framework for Educators (DigCompEdu):

1.2 Professional collaboration

1.3 Reflective practice

4.1 Assessment strategies

5.1 Accessibility & inclusion

6.3 Digital content creation

6. Next steps and Certificate

If you complete this course successfully, why not take our other courses in the Open Digital Education Ecosystem and optionally purchase the **Open Digital Education Ecosystem Open Certificate**?

- Open Licenses
  - Recognise and apply open licenses.
- Open content
  - 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.
- Introduction to Moodle.Net course
  - Explore the latest version of MoodleNet and discover how to take the most out of open educational resources

7. Licence

Review, learn and practice

Tutorial: Open Digital Tools

1. In the course of **Using Digital Tools in Education**, the first module is dedicated to Introduction to open digital tools

In this module we present:

- What are open licences?
- What are open digital tools?
- What is open source?
- Open Source Software
- OSS Community
- OSS on Github
- Moodle Community
- And at the end Testing

2. **Introduction**

What are open licences?

A licence is a document that specifies what you can and cannot do with a creation, be it sound, text, image or multimedia.

A Creative Commons licence allows you to decide which rights you want to keep, indicating how you allow your work to be reused without having to ask permission in advance.

Creative Commons licences are legally enforceable, open source copyright licences.

The different levels of Open Attribution 4.0 International Creative Commons licences are presented and explained, each allowing a specific type of reuse and modification of the works created or used

So, even if you licence your work under CC, you don't lose your copyright, but your work can be known and used by more people.

An important part of open digital tools for education are Open Educational Resources (OER).

These are tools used for the process of learning, teaching, research or other educational purposes that are available in an accessible format and under a free licence, which means they endorse free access, as well as use, adaptation and redistribution by others with limited or no restrictions.

The principles of the 5 Rs are presented and explained in this module

Remember

Reuse

Review

Remix

Redistribute

The term „Open” means the removal of technical and legal restrictions on use.

Open source describes the practice of producing or developing certain products, allowing users free access to the production or development process. It is most commonly used in software development, but is also applicable in many other fields.

When we refer to software as "free", we mean that it respects the essential freedoms of the user: the freedom to run it, to study and modify it, and to redistribute copies with or without modifications, that is, under the GNU General Public License.

Open source software is software developed by a community, a company or an individual and offered for use under a free licence that guarantees access to the source code for all users.

Open source software for education provides free access to the source code and allows it to be modified and distributed, promoting collaboration and innovation. These programs are developed by communities or individuals who share resources to create accessible solutions for education.

These programs are used in schools and universities to reduce the costs associated with software licences and to encourage the development of students' technical and collaborative skills. Teachers can customize the educational content to the learners' needs, and students can explore and modify the software, learning programming and technology in a practical way.

Open Source Software (OSS) communities offer a variety of resources, multiple tools and support that can significantly assist teachers in preparing and delivering effective learning experiences.

The advantages of OSS communities are open collaboration, rapid innovation, free sharing of resources and continuous improvement of the software thanks to multiple contributors.

Some of the communities are presented with examples of integration in education.

3. What are open digital tools?

- **Open Source Software**

(context - how and where to use the tools)

- **OSS Community - examples on Github, Moodle Community**

(context - how and where the tools are used)

Open Source Software (OSS) communities offer a variety of resources, multiple tools and support that can significantly assist teachers in preparing and delivering effective learning experiences.

The main benefits of these communities are presented below.

Access to free tools and resources

OSS Communities provide free access to a wide range of software tools that can be used to create, organize and deliver educational content. This includes office suites such as LibreOffice, learning management systems (LMS) such as Moodle and multimedia tools such as Audacity and GIMP.

Many OSS communities offer repositories of educational materials, templates and plugins that teachers can use or adapt free of charge for their courses.

Customization and flexibility

Open-source software is highly customizable, allowing teachers to adapt the tools to their specific educational requirements. For example, they can modify the functionality of an LMS or adjust software to better align with their teaching methods.

OSS communities often develop extensions, plug-ins and modules that add new features or enhance existing ones. Teachers can use these to enhance their teaching tools without needing extensive technical skills.

Collaboration and dissemination

OSS communities are built on collaboration. Teachers can contribute to or benefit from disseminated educational resources, as well as lesson plans and curricula developed by other teachers in the community.

Being part of an OSS community provides access to a network of like-minded teachers and developers who can offer support, advice and share best practices in their area of expertise. This can be an asset for problem solving and continuous professional development.

Training and professional development

Many OSS communities offer training sessions, webinars and tutorials to help users learn how to use their software effectively. This is particularly beneficial for teachers who want to improve their skills or integrate new tools into their teaching practice.

Comprehensive documentation and active community forums provide teachers with the knowledge they need to find quick solutions and workarounds to problems, learn new features and maximize the potential of the tools they use.

Innovative teaching methods

OSS communities often encourage a culture of experimentation, allowing teachers to explore and implement innovative teaching methods and technologies that may not be available through proprietary software.

They promote the use of Open Educational Resources (OER). Many OSS projects are linked to OER initiatives, providing access to free educational content that can be adapted and reused, encouraging a more open and collaborative approach to teaching.

Sustainability and ethical considerations

OSS tools are often more sustainable in the long term as they do not depend on commercial licensing models. Teachers can rely on these tools without worrying about budget constraints or software becoming obsolete due to discontinued support.

OSS aligns with principles of openness and inclusion, which can resonate with teachers committed to providing equitable access to learning. Using OSS can also encourage students to use technology in a more transparent and ethical way.

Global collaboration and localization

OSS communities are global, which often leads to the development of localized versions of software and educational materials. This is particularly useful for teachers working in linguistically and culturally diverse contexts.

Teachers can engage in cross-cultural exchanges with other teachers around the world, enriching their teaching practice and broadening the perspectives of their students.

OSS communities therefore empower teachers by providing them with accessible, customizable, and collaborative tools that improve both the preparation and delivery of learning. By engaging in these communities, teachers can innovate in their classrooms, access plenty of shared knowledge, and contribute to a more open and equitable educational landscape.

There are many examples of Open Source Software communities that provide resources and assistance in using certain applications to anyone, free of charge. Some of these are listed below.

- Linux and related distributions
    - Communities: Linux Kernel, Ubuntu, RedHat, Fedora, Debian, Arch Linux, etc.
    - Focus: Operating systems and related software.
    - Areas of contribution: Kernel development, package management, desktop environments, documentation and user support.
    - Why it's important: Linux distributions are the foundation of many open-source projects and are widely used in education, research and enterprise environments.
- Apache Software Foundation (ASF)
    - Communities: Apache HTTP Server, Hadoop, Spark, Spark, Kafka, OpenOffice, etc.
    - Focus: Wide range of software projects, especially in web servers, big data, cloud computing and workplace productivity.
    - Areas of contribution: Code development, documentation, bug fixing and community management.
    - Why it's important: ASF projects are critical for internet infrastructure, big data processing and various enterprise applications.
- The Document Foundation
    - Community: LibreOffice
    - Focus: Office productivity suite.
    - Areas of contribution: Development, localization, user support, documentation and marketing.
    - Why it's important: LibreOffice is one of the most popular open-source alternatives to proprietary office suites, widely used in education and government.
- Mozilla Foundation
    - Communities: Firefox, Thunderbird, Rust (former), MDN Web Docs, etc.
    - Focus: Web browsers, email clients, programming languages and web development resources.

    - Areas of contribution: Code contributions, bug fixing, documentation, advocacy and community outreach.
    - Why it's important: Mozilla projects are an integral part of the Open Web, emphasizing user privacy, security, and open standards.
- KDE and GNOME
    - Communities: KDE Plasma, GNOME Shell, etc.
    - Focus: Desktop environments and applications for Linux and other Unix-like operating systems.
    - Areas of contribution: Software development, UI/UX design, documentation, translations and user support.
    - Why it's important: KDE and GNOME are two of the most important desktop environments in the Linux ecosystem, offering a wide range of applications and tools.
- Python Software Foundation
    - Community: Python
    - Focus: Programming language and ecosystem.
    - Areas of contribution: Core development, contributions to libraries, documentation, tutorials, community involvement and event organization.
    - Why it's important: Python is one of the most popular programming languages globally, widely used in education, data science, web development and automation.
- Free Software Foundation (FSF) and GNU Project
    - Communities: GNU Compiler Collection (GCC), GNU Emacs, Bash, GNU Privacy Guard (GPG), etc.
    - Focus: Free software development and promotion of the Free Software philosophy.
    - Areas of contribution: Software development, advocacy, documentation and community building.
    - Why it's important: The FSF and the GNU project have been essential in the development of the Free Software Initiative, providing essential tools and frameworks for open-source development.
- OpenStack
    - Community: OpenStack
    - Focus: Cloud computing platform.
    - Areas of contribution: Core development, module contributions, documentation, deployment and user support.
    - Why it's important: OpenStack is a leading open-source cloud computing platform used by enterprises, research institutions and governments to build and manage public and private clouds.
- Moodle
    - Community: Moodle
    - Focus: Learning Management System (LMS).
    - Areas of contribution: plugin development, core development, documentation, community support and educational resources.
    - Why it's important: Moodle is one of the most widely used LMS platforms globally, supporting a large community of educators and developers.

- GitHub and GitLab Communities
    - Communities: Numerous open-source projects hosted on GitHub and GitLab, including Node.js, TensorFlow, Kubernetes, and more.
    - Focus: Code hosting, version control and collaboration.
    - Contribution areas: Code contributions, issue tracking, documentation, and community engagement.
    - Why it's important: These platforms host a large number of open-source projects from all domains, providing tools for collaboration, code sharing and community development.

These OSS communities not only develop and maintain important software, but also foster environments where collaboration between different parties, knowledge sharing and innovation are strengthened. They provide valuable opportunities for teachers, developers and users to contribute to meaningful projects and benefit from a global network of like-minded people.

4. What are open digital tools and resources?

Open digital tools are software applications, platforms, or resources that are freely accessible, modifiable, and distributable, often developed collaboratively, and typically governed by open-source licenses, allowing users to customize and use them without restrictive limitations.

Open Licences

All resources developed and used in the world are subject to licences. Licences are legal agreements granting permission to use, access, or distribute a product, service, or intellectual property under specific terms and conditions.

There are several types of licences see below), but open digital tools are governed by open licences, public domain and creative commons licence.

Public Domain

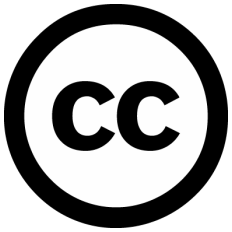
- Copyright has expired (depending on country and EU regulations).
- Was never eligible for copyright.
- Clearly donated to the Public Domain.
- NOT the same as “free online”.

Intellectual property licence

- An intellectual property licence is a legal agreement that grants permission to use, produce, or commercialise intellectual property rights, such as patents, trademarks, or copyrights, under specified conditions.
- permitting free use, reuse, modification, and sharing – Creative Commons

Copyright

- all rights reserved to the owner.



Creative Commons

A simple, standardised way to grant copyright permissions to your creative work.

Creative Commons (CC) is the most developed alternative licensing approach that provides user-friendly open licences for digital materials and avoids the automatically applied copyright restrictions. CC creates a "some rights reserved" model. The copyright owner retains intellectual property ownership in their work while inviting certain uses of their work by the public. CC licences create choice and options for the owner.

How you can choose which is the right CC licence for you - https://creativecommons.org/share-your-work/

"Creative Commons licences are legal tools that help you grant copyright permissions to the general public. Our CC legal tools include six different licences and one public domain dedication tool. It is important to specify which one of the 7 legal tools you are applying to your material. The licence chooser can help you decide which licence is right for you.

CC licences may be applied to any type of copyrightable work. The only types of works for which CC does not recommend its licences are computer software and hardware, where we recommend a standard free software licence instead. For works that are already in the public domain we recommend that you mark them with the Public Domain Mark. If you hold the rights to a work but would like to place it into the public domain, you can use the Chooser to select CC0." from https://creativecommons.org/share-your-work/cclicenses/

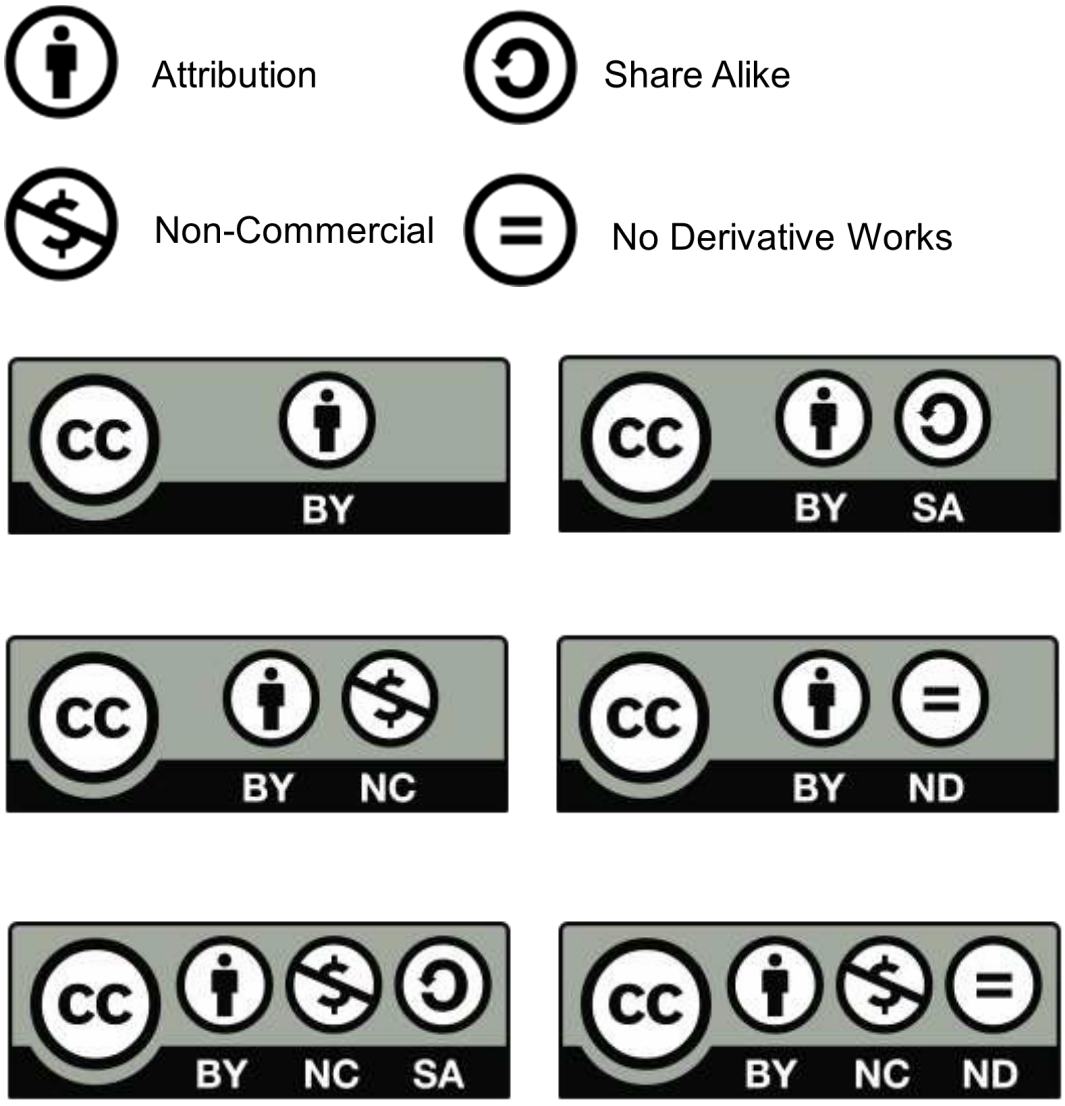
Creative Commons licences can help you to:

- **Share original works** by making them more useful to others.
- Legally (and easily) **incorporate CC-licensed works** authored by others in your own work.

Added bonuses - Using CC-licences may:

- **Extend your impact**, audience and the reach of your work.
- Start (and build on) a **virtuous cycle of sharing.**
- **Save money** for your students and other readers.

Step 1 – Choose your licence conditions



CC primary licence elements

There are 4 primary licence elements which are mixed to create a licence:

Attribution – attribute the author

Non-commercial – no commercial use

No Derivative Works – no remixing

ShareAlike – remix only if you let others remix

There are six standard CC licences:

Attribution

Attribution – share alike

Attribution - non-commercial

Attribution – non-commercial share alike

Attribution - no derivatives

Attribution – non-commercial – no derivatives

Licence Type	Licence Conditions
Attribution 	**Freely use, copy, adapt and distribute to anyone provided the copyright owner is attributed.**
Attribution No Derivatives 	**Freely use, copy and distribute to anyone but only in original form. The copyright owner must be attributed.**

Attribution Share Alike 	**Freely use, copy, adapt and distribute provided the new work is licensed under the same terms as the original work. The copyright owner must be attributed.**
Attribution Non Commercial 	**Freely use, copy, adapt and distribute for non-commercial purposes. The copyright owner must be attributed.**
Attribution Non C ommercial No Derivatives 	**Freely use, copy and distribute verbatim copies of the original work for non-commercial purposes. The copyright owner must be attributed.**
Attribution Non Commercial Share Alike 	**Freely use, copy, adapt and distribute for non-commercial purposes provided the new work is licensed under the same terms as the original work. The copyright owner must be attributed.**

Which CC licence should you use?

- CC BY is the recommended licence as it allows for the greatest possible reuse of licensed material.
- CC BY ND (No Derivatives) is not recommended as it prevents others from making adaptations.
- CC BY NC (Non Commercial) is also not recommended as it restricts further use and may not be usable by the non-government school sector. Teaching resources can be sold on a cost recovery basis under CC BY.

How to find CC materials?

Search on https://ccsearch.creativecommons.org/.

5. Open source software

Open source software (OSS) refers to software that is distributed with its source code made publicly available, allowing anyone to view, modify, and distribute it. This open nature fosters collaboration, innovation, and transparency, enabling communities of developers to contribute improvements, fix bugs, or adapt the software to meet specific needs.

The foundation of OSS is its licensing model, which ensures that the software remains freely accessible and modifiable. Some of the most common open-source licenses include the GNU General Public License (GPL), https://www.gnu.org/home.en.html Apache License, and MIT License, each imposing varying degrees of conditions on usage and distribution.

GNU is an operating system that is free software—that is, it respects users' freedom. The GNU operating system consists of GNU packages (programs specifically released by the GNU Project) as well as free software released by third parties. The development of GNU made it possible to use a computer without software that would trample your freedom.

The Apache License is an open-source software license developed by the Apache Software Foundation (ASF) that allows users to freely use, modify, and distribute software, both in its original or modified form, under specific terms. It is permissive, meaning it places relatively few restrictions on reuse, and allows for both open-source and proprietary use of the software. Key provisions include requirements to provide attribution to the original authors, a disclaimer of warranties, and the ability to distribute modified software under different terms as long as the original license is included. One popular version is the Apache License 2.0.

https://www.apache.org/licenses/

The MIT License is a permissive software license originating at the Massachusetts Institute of Technology (MIT)[6] in the late 1980s. As a permissive license, it puts very few restrictions on reuse and therefore has high license compatibility.

Unlike copyleft software licenses, the MIT License also permits reuse within proprietary software, provided that all copies of the software or its substantial portions include a copy of the terms of the MIT License and also a copyright notice. In 2015, the MIT License was the most popular software license on GitHub.

Notable projects that use the MIT License include the X Window System, Ruby on Rails, Node.js, Lua, jQuery, .NET, Angular, and React. (source https://en.wikipedia.org/wiki/MIT_License)

Information on OSS https://osssoftware.org/

OSSSoftware.org is a resource hub for exploring open-source software alternatives to commercial tools. It provides directories and reviews of various open-source projects, offering users insights into how open-source solutions can replace proprietary software across different domains such as productivity, security,

and development. The platform promotes free and open-source software (FOSS) by emphasizing the benefits of community-driven development, transparency, and cost-effectiveness.

Users can browse tools by categories (e.g., AI, analytics, web development) and find open-source alternatives for popular paid software like Salesforce, Postman, or Power BI.

One of the key benefits of OSS is the flexibility it offers. Since the code is openly available, users can tailor the software to fit their specific requirements, whether for personal use or within an organization. This flexibility is particularly useful for businesses looking for customizable, cost-effective solutions. Additionally, the collaborative nature of OSS ensures continuous improvement, as contributions from a global community of developers lead to more robust, secure, and feature-rich applications.

Well-known examples of OSS include operating systems like Linux, web browsers such as Mozilla Firefox, and content management systems like WordPress. These tools have been widely adopted due to their reliability and community-driven support. Furthermore, OSS encourages learning and skill development, as programmers can study the code, understand its functionality, and contribute to its development.

In contrast to proprietary software, which restricts access to the source code and often involves licensing fees, OSS promotes a more open, inclusive model that emphasizes collective progress and shared benefits. This model has had a transformative impact on the software industry, driving innovation and enabling users and developers to collaborate across geographic and organizational boundaries.

6. The Open Source Definition

Introduction

Open source doesn't just mean access to the source code. The distribution terms of open source software must comply with the following criteria:

1. Free Redistribution

The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

2. Source Code

The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost, preferably downloading via the Internet without charge. The source code must be the preferred form in which a

programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

3. Derived Works

The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

4. Integrity of The Author's Source Code

The license may restrict source-code from being distributed in modified form only if the license allows the distribution of "patch files" with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.

5. No Discrimination Against Persons or Groups

The license must not discriminate against any person or group of persons.

6. No Discrimination Against Fields of Endeavor

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

7. Distribution of License

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

8. License Must Not Be Specific to a Product

The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.

9. License Must Not Restrict Other Software

The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open source software.

10. License Must Be Technology-Neutral

No provision of the license may be predicated on any individual technology or style of interface.

The Open Source Definition was originally derived from the Debian Free Software Guidelines (DFSG). And it is here https://opensource.org/osd

7. OSS Community - examples on Github, Moodle Community

Open Source Software (OSS) communities offer a wealth of resources, tools, and support that can significantly aid teachers in preparing and delivering effective learning experiences.

The main benefits of these communities are presented below.

Access to Free Tools and Resources

OSS communities provide free access to a wide range of software tools that can be used for creating, organising, and delivering educational content. This includes office suites like LibreOffice, learning management systems (LMS) like Moodle, and multimedia tools like Audacity and GIMP.

Many OSS communities offer repositories of educational materials, templates, and plugins that teachers can freely use or adapt for their courses.

Customization and Flexibility

Open-source software is highly customizable, allowing teachers to adapt tools to their specific educational requirements. For instance, they can modify the functionality of an LMS or tweak a piece of software to better align with their teaching methods.

OSS communities often develop extensions, plugins, and modules that add new features or improve existing ones. Teachers can leverage these to enhance their teaching tools without needing extensive technical skills.

Collaboration and Sharing

OSS communities are built on collaboration. Teachers can contribute to or benefit from shared educational resources, lesson plans, and curricula developed by other educators within the community.

Being part of an OSS community provides access to a network of like-minded educators and developers who can offer support, advice, and share best practices. This can be invaluable for problem-solving and continuous professional development.

Training and Professional Development

Many OSS communities offer training sessions, webinars, and tutorials to help users learn how to use their software effectively. This is particularly beneficial for teachers looking to upskill or integrate new tools into their teaching practice.

Comprehensive documentation and active community forums provide teachers with the knowledge they need to troubleshoot issues, learn new features, and maximise the potential of the tools they are using.

Innovative Teaching Methods

OSS communities often foster a culture of experimentation, allowing teachers to explore and implement innovative teaching methods and technologies that may not be available through proprietary software.

They promote the use of Open Educational Resources (OER). Many OSS projects are linked with OER initiatives, providing access to free educational content that can be adapted and reused, encouraging a more open and collaborative approach to teaching.

Sustainability and Ethical Considerations

OSS tools are often more sustainable in the long term because they are not dependent on commercial licensing models. Teachers can rely on these tools without worrying about budget constraints or software becoming obsolete due to discontinued support.

OSS aligns with principles of openness and inclusivity, which can resonate with educators committed to providing equitable access to learning. The use of OSS can also encourage students to engage with technology in a more transparent and ethical manner.

Global Collaboration and Localization

OSS communities are global, often leading to the development of localised versions of software and educational materials. This is particularly useful for teachers working in diverse linguistic and cultural contexts.

Teachers can engage in cross-cultural exchanges with other educators from around the world, enriching their teaching practice and broadening their students' perspectives.

Therefore, OSS communities empower teachers by providing them with accessible, customizable, and collaborative tools that enhance both the preparation and delivery of learning. By engaging with these communities, teachers can innovate in their classrooms, access a wealth of shared knowledge, and contribute to a more open and equitable educational landscape.

There are many examples of Open Source Software communities that provide anyone, for free, resources and support in using particular applications. Some of these are listed below.

- Linux and Related Distributions
    - Communities: Linux Kernel, Ubuntu, RedHat, Fedora, Debian, Arch Linux, etc.
    - Focus: Operating systems and related software.
    - Contribution Areas: Kernel development, package management, desktop environments, documentation, and user support.

    - Why Important: Linux distributions are foundational to many open-source projects and are widely used in education, research, and enterprise environments.
- Apache Software Foundation (ASF)
    - Communities: Apache HTTP Server, Hadoop, Spark, Kafka, OpenOffice, etc.
    - Focus: A wide range of software projects, particularly in web servers, big data, cloud computing, and office productivity.
    - Contribution Areas: Code development, documentation, bug fixing, and community management.
    - Why Important: ASF projects are critical to internet infrastructure, big data processing, and various enterprise applications.
- The Document Foundation
    - Community: LibreOffice
    - Focus: Office productivity suite.
    - Contribution Areas: Development, localization, user support, documentation, and marketing.
    - Why Important: LibreOffice is one of the most popular open-source alternatives to proprietary office suites, widely used in education and government.
- Mozilla Foundation
    - Communities: Firefox, Thunderbird, Rust (previously), MDN Web Docs, etc.
    - Focus: Web browsers, email clients, programming languages, and web development resources.
    - Contribution Areas: Code contributions, bug fixing, documentation, advocacy, and community support.
    - Why Important: Mozilla's projects are integral to the open web, emphasising user privacy, security, and open standards.
- KDE and GNOME
    - Communities: KDE Plasma, GNOME Shell, etc.
    - Focus: Desktop environments and applications for Linux and other Unix-like operating systems.
    - Contribution Areas: Software development, UI/UX design, documentation, translations, and user support.
    - Why Important: KDE and GNOME are two of the most prominent desktop environments in the Linux ecosystem, offering a wide range of applications and tools.
- Python Software Foundation
    - Community: Python
    - Focus: Programming language and ecosystem.
    - Contribution Areas: Core development, library contributions, documentation, tutorials, community outreach, and event organisation.
    - Why Important: Python is one of the most popular programming languages globally, used extensively in education, data science, web development, and automation.
- Free Software Foundation (FSF) and GNU Project
    - Communities: GNU Compiler Collection (GCC), GNU Emacs, Bash, GNU Privacy Guard (GPG), etc.

    - Focus: Development of free software and promotion of the free software philosophy.
    - Contribution Areas: Software development, advocacy, documentation, and community building.
    - Why Important: The FSF and GNU Project have been pivotal in the development of the free software movement, providing essential tools and frameworks for open-source development.
- OpenStack
    - Community: OpenStack
    - Focus: Cloud computing platform.
    - Contribution Areas: Core development, module contributions, documentation, deployment, and user support.
    - Why Important: OpenStack is a leading open-source platform for cloud computing, used by enterprises, research institutions, and governments for building and managing public and private clouds.
- Moodle
    - Community: Moodle
    - Focus: Learning management system (LMS).
    - Contribution Areas: Plugin development, core development, documentation, community support, and educational resources.
    - Why Important: Moodle is one of the most widely used LMS platforms globally, supporting a large community of educators and developers.
- GitHub and GitLab Communities
    - Communities: Numerous open-source projects hosted on GitHub and GitLab, including Node.js, TensorFlow, Kubernetes, and many more.
    - Focus: Code hosting, version control, and collaboration.
    - Contribution Areas: Code contributions, issue tracking, documentation, and community engagement.
    - Why Important: These platforms host a vast number of open-source projects across all domains, providing tools for collaboration, code sharing, and community development.

These OSS communities not only develop and maintain important software but also foster environments where collaboration, knowledge sharing, and innovation thrive. They provide valuable opportunities for teachers, developers, and users to contribute to meaningful projects and benefit from a global network of like-minded individuals.

Course check

Introduction to Open Digital Tools: Check your understanding

Q1: Which of the following terms are part of the “5 Rs”?

A. Reuse

B. **Remix**
C. Reference
D. Ready

Q2: What is Creative Commons Licence?

A. simple, standardised way to grant copyright permissions to creative work
B. complicated way to avoid copyright
C. everything is free and you can do whatever you want with resources.

Q3: What is open source software?

A. **Open source software (OSS) refers to software that is distributed with its source code made publicly available, allowing anyone to view, modify, and distribute it.**
B. Open source software (OSS) refers to software that is distributed free and everybody can use it.
C. Open source software (OSS) refers to software that is licensed and you can use it.

Feedback

Module evaluation survey

Module 2: Open Digital Tools for teaching systems

Welcome

Welcome to the Open Digital Tools for teaching systems, where you will learn about Learning Management Systems, OpenEdX, MOOCs, OER and OER Commons.

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.

1. Module overview

Aim

In this module you will:

- Examine the concept of Learning Management Systems and their purpose
- Recognise the different types of Digital Resources
- Learn how to use OER and OER Commons
- Learn how to integrate MOOCs into your courses
- Learn how to develop Open Education best practices in an open and accessible manner

Estimated time

The estimated time to complete this course is 3 hours.

2. Learning outcomes

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

- Recognise and apply open licences. More specifically you will be able to:

    - **explain** concepts such as Learning Management systems, MOOCs, OER and OER Commons and their purpose
    - **distinguish** between the different types of Digital Resources
    - **apply** steps to integrate MOOCs into your Moodle course
    - **share** an OER by integrating it on your institution LMS

- **find** OER featuring content for your specific educational needs

Review, learn and practice

Tutorial: Open Digital Tools for teaching systems

1. **Focus for this tutorial**

In this tutorial we explore:

- Learning Management systems
- OpenEdX
- MOOCs
- OER and OER Commons

2. **Learning Management systems**

Learning Management systems

Moodle - what is Moodle, Moodle community

Moodle is the most popular open-source Learning Management System. It provides the framework for conducting online teaching and learning. First appearing in 2001, It is currently managed and developed by the Moodle HQ corporation. With Moodle, teachers can create and organise course materials and activities, communicate with students, assess their activity and manage the whole pedagogical process. It is easily extendable through plugins either developed by the community, or custom designed and coded at the request of participants to the educational process.

Functionalities supporting blended and online learning:

Digital Resources

There are many types of course resources which can be used by educators to deliver learning content:

- Pages
- Files
- Folders
- Books
- URLs
- Labels
- IMS Content Packages

Teaching & Learning

Moodle offers many tools to facilitate interaction between users, and between learners and course materials:

- Communication tools:
  - Discussion forums
  - Chats
  - Direct Messaging
  - Audio-Video conferencing
- Collaborative activities:
  - Workshops
  - Wikis
  - Glossaries
  - Databases
  - H5P activities
- Management tools:
  - Attendance
  - Gradebook
  - Activity reports

Main teaching and learning functionalities:

- Course resources: Teachers add course content in a large variety of formats.
- Assignments: Tutors configure learning activities, either collaboratively or individually.
- Communication: Users have many different communication channels at their disposal, either one-on-one, or one-to-many.
- Announcements: Teachers can give any updates about the course to the learners. Messages are automatically sent via email as well.
- Evaluation: Educators can evaluate the learners' progress and use many types of grading scales or systems.

The Moodle Community is essential in developing, supporting, and promoting Moodle as a learning management system. Key roles include:

1. **Development**: Contributing to core code, creating plugins, and enhancing features.
2. **Support**: Offering help through forums, documentation, and troubleshooting.
3. **Localization**: Translating Moodle into multiple languages for global accessibility.
4. **Best Practices**: Sharing educational resources, strategies, and case studies.
5. **Training**: Providing workshops, webinars, and certification programs.
6. **Advocacy**: Promoting open-source values and organising events like MoodleMoots.
7. **Feedback**: Offering user feedback and participating in beta testing for continuous improvement.
8. **Collaboration**: Working with Moodle HQ to align on strategic goals and development.

Overall, the community drives Moodle's evolution and ensures it meets the diverse needs of educators and learners worldwide.

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

Sakai

Sakai este un sistem de management al învățării (LMS) open-source, conceput special pentru medii educaționale. Acesta permite profesorilor să creeze și să gestioneze cursuri online, iar studenților să acceseze materialele de curs, să interacționeze cu profesorii și colegii și să își depună temele. Sakai este utilizat pe scară largă în instituții de învățământ din întreaga lume, oferind flexibilitate, integrare și accesibilitate.

LMS-ul Sakai a apărut în anul 2005 din inițiativa mai multor medii universitare care și-au pus în comun uneltele dezvoltate individual pentru crearea unei soluții educaționale complexe. Aceste universități sunt:

- Indiana University
- Massachusetts Institute of Technology
- Stanford University
- University of Michigan

Aceste instituții au sprijinit atât financiar, cât și prin contribuții de dezvoltare acest proiect, de-a lungul timpului reușind să atragă și alți parteneri.

Sakai main features:

- COMMUNICATIONS AND COLLABORATION - Robust communication options and strong support for groups make it easier to keep in touch, learn together, and work in teams. Choose from a variety of synchronous and asynchronous tools for messaging, discussions, social connections, and collaborative work. These include: Announcements, Calendar, Chat, Commons, Contact Us, Email, Email Archive, Forums, Messages, Sign-up, Wiki.
- GRADING AND ASSESSMENT - State of the art grading and assessment features make Sakai a great choice for collecting student submissions and providing rich feedback on their work. Whether you need high stakes testing, formative assessments, online assignments, rubric-based scoring, or fast, easy grade-entry capabilities, Sakai's got you covered.
- COURSE DEVELOPMENT AND DELIVERY - Building your course has never been easier! Sakai lets you create and organise text, resources, quizzes, tests, assignments, links, video, and other media into coherent lessons or modules; control access to materials via conditional release; upload, store, and share files and other resources; and much more.
- POWERFUL SYSTEM ADMINISTRATION - Powerful course and system administration features give you the tools to manage courses and users effectively and efficiently. Sakai's highly configurable system of roles and permissions lets you customise the platform to match your business processes.

- COMMUNITY CONTRIBUTED TOOLS - Take advantage of open source, Sakai-specific tools developed by community members and then released for others to use outside of the packaged Sakai release. You can even build your own if you like!
- INTEGRATION WITH EXTERNAL APPS - Sakai is a leader in the development and implementation of the IMS LTI specification. In addition, Sakai has an extensive API which facilitates the development of deep, native integrations with third party applications.

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

Atutor, Ilia , Linux - RedHat

ATutor is an Open Source Web-based Learning Management System (LMS) used to develop and deliver online courses. Administrators can install or update ATutor in minutes, develop custom themes to give ATutor a new look, and easily extend its functionality with feature modules. Educators can quickly assemble, package, and redistribute Web-based instructional content, easily import prepackaged content, and conduct their courses online. Students learn in an accessible, adaptive, social learning environment.

Key features include:

- Accessibility: ATutor is designed with a focus on accessibility, ensuring that it meets Web Content Accessibility Guidelines (WCAG) and is usable by individuals with disabilities.
- Course Management: Instructors can create, organise, and manage online courses, including lessons, assignments, and assessments. The platform supports various content formats, including text, multimedia, and external links.
- Customization and Themes: Users can customise the look and feel of their ATutor installation with different themes and modify features according to their needs.
- Collaboration Tools: The platform includes forums, chat rooms, and group workspaces to facilitate interaction and collaboration among students and instructors.
- Content Import/Export: ATutor supports content interoperability standards such as SCORM and Common Cartridge, allowing easy import and export of learning materials.
- User Management: Administrators can manage user roles, permissions, and track learner progress through detailed reporting and analytics.
- Multilingual Support: The platform offers multilingual capabilities, making it suitable for diverse educational environments.

ATutor is particularly known for its strong accessibility features and adaptability, making it a solid choice for institutions prioritising inclusive education.

https://www.youtube.com/watch?v=X5VGbs5Zr38

ILIAS is a versatile, open-source learning management system (LMS) that provides a wide range of features for creating and managing online learning environments. Key features include:

- Course and Content Management: ILIAS allows instructors to create structured courses, including interactive content, quizzes, and multimedia resources. It supports SCORM and other content standards for easy import/export.
- Personalized Learning Paths: The platform offers flexible learning paths, allowing educators to tailor courses to individual learner needs and track progress through customizable learning sequences.
- Collaboration Tools: ILIAS includes forums, wikis, blogs, and group workspaces to facilitate communication and collaboration among learners and instructors.
- Assessment and Evaluation: The system provides robust tools for creating and managing assessments, including tests, surveys, and assignments, with detailed reporting and analytics to monitor learner performance.
- User and Role Management: Administrators can manage user roles and permissions, ensuring that the platform meets the needs of different user groups, from students to teachers and admins.
- Integration and Customization: ILIAS offers extensive customization options, including plugins and API integrations, enabling institutions to tailor the LMS to their specific requirements.
- E-Learning Standards Compliance: ILIAS is compliant with various e-learning standards, including xAPI and SCORM, ensuring interoperability with other learning systems and tools.
- Mobile Access: The platform supports mobile learning, allowing users to access courses and content on various devices.

ILIAS is known for its flexibility, scalability, and strong support for complex learning scenarios, making it a popular choice for universities, companies, and public administrations worldwide.

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

There are many other open-source Learning Management Systems that can be installed on your own server infrastructure, thus managing and owning the data of your users. Linux plays a crucial role in running open-source learning management systems (LMS) by providing a stable, secure, and customizable operating environment. This is possible due to Linux's extensive features, such as: it's open-source alignment, stability and performance, focus on security, customization and flexibility, scalability, and last but not least, the community behind its development and use.

Red Hat Linux is a widely recognized and influential distribution of the Linux operating system, developed by Red Hat, Inc. It was initially released in 1994 and became one of the most popular Linux distributions in the early days of the open-source movement. Red Hat Linux was a freely distributed version of Linux that included the Linux kernel along with various open-source applications and utilities. This version was available until 2003, when Red Hat transitioned to a more enterprise-focused model. The company shifted its focus to Red Hat Enterprise Linux (RHEL), which is a commercial version aimed at enterprise environments. RHEL provides a stable, secure, and supported Linux platform for businesses. Despite RHEL being a commercial product, its development is rooted in the open-source community, with Red Hat

contributing to numerous open-source projects and maintaining a strong commitment to open-source principles. Red Hat has been a leader in the Linux and open-source communities, driving innovation and adoption of open-source technologies in the enterprise space. Therefore, Red Hat Linux, through its evolution into Red Hat Enterprise Linux, has become a cornerstone of enterprise computing, offering a powerful, secure, and supported Linux distribution tailored for large-scale, mission-critical applications.

https://www.youtube.com/watch?v=HEBvdSI0wGQ

Blackboard

Blackboard is a leading EdTech company and a popular and widely used collaborative learning platform. For HEIs using the platform, Blackboard can be accessed through the school or university website.

Blackboard also has a mobile app which many HEIs reported as popular amongst students and teachers. The platform is primarily used for teaching and storing module content such as documents and other files.

It can also be used for examinations, setting quizzes, as a chatroom function and student interaction in a variety of other virtual learning spaces. In addition, there are multiple plug-ins available, one of the most popular being Blackboard Collaborate Ultra which allows virtual classrooms to be established for teaching.

Blackboard is currently one of the most well established collaborative learning platforms and is used by many schools, universities and other organisations worldwide. Using Blackboard does require that these institutions purchase a valid subscription or licence, and there is no free version of this application.

The platform has the following feature set:

- Storage of all class materials
- Multiple plug-ins
- Create exams and assessments

- Support meetings, breakout rooms, and collaborative work
- Attendance reporting
- Webinar features
- Discussion forums

https://www.youtube.com/watch?v=F5vIVK1XfIE

Google Classroom

Google Classroom is a free web service developed by Google for schools that aims to simplify the process of creating, distributing, and grading assignments. The primary purpose of Google Classroom is to streamline the process of sharing files between teachers and students.

It is designed to make it easier for education professionals to conduct virtual lessons. It allows teachers to create and organise lessons, while also allowing communication with students, and the submission of work by students, and all within the same platform, without having everything scattered across different accounts and services.

Google Classroom is an application for creating an inclusive virtual classroom for students and teachers. Also, it has so many tools that collaborate with Google's other applications like Google Meet, Gmail, Google Calendar, Google Forms, and Google Drive etc.

Google Classroom is recognised to be one of the most efficient and simple ways to take learning online for both in-class and remote studying. It is free to use and easy to get started. The platform is an easy-to-use application for both students and teachers. Creating and managing a classroom is easy, but there are some problems, particularly on the teacher's side.

Google Classroom is very easy to use for someone who has used other applications for meetings. It has simple pages for everyone. The application has popup tutorials for each activity that you try to do. After a 30 minute lesson (maximum) everyone can use Google Classroom smoothly, even the teachers who are not very good with technology.

Main teaching and learning functionalities:

- Managing courses/sharing resources: Teachers edit course information and share resources with the class.
- Assignments: Teachers have permission for creating learning activities, manage and give grades to them.

- Virtual discussions: Teachers can start discussions that learners can answer them.
- Announcements: Teachers can give updates about everything to learners. It will be on their front page.
- Questions: Teachers can ask questions multiple choice, short answer, Google Forms etc.
- Live classes: Teachers can set up classes up to 250 students with Google Meet.
- Control student interactions: Students' permissions can be controlled on 3 levels. Create posts and comment, only comment, and only teachers can create posts and comment.
- Invite students: Teachers have ability to invite students and teachers with invite code or invite links.
- Create classwork or post materials: Teachers can create assignments, quizzes and questions. Also they have the ability to add Materials to the Classwork Page.

https://www.youtube.com/watch?v=oeKunTmFV3A

3. OpenEdX

OpenEdX is another open-source learning management system (LMS) popular in academia. OpenEdX allows teachers to create and manage online courses and students to access course materials, interact and submit assignments. OpenEdX is known for its flexibility, integration with various platforms and ability to host massive online courses (MOOCs). It is a popular choice for educational institutions that want to offer large-scale online courses.

The most widely known and used local MOOC platform is Open edX[1]. The Open edX learner platform is installed locally and can be considered as a mixed approach between a full-fledged Learning Management System and a MOOC platform. With clients for desktop, iOS and Android, Open Edx provides access to course content and supporting infrastructure (schedules, discussion boards, collaboration tools, student administration, certificate generation, messaging, and more). It also includes Open edX Studio, that allows to author courses and content and manage courses schedule, course team, and grading policy. Content can be interactive learning resources on High Definition (HD) video, animation, simulation, and Augmented Reality (AR)/Virtual Reality (VR) learning technology. It supports open XML standards (OLX) for import/export of courses and content. Open edX already includes a set of learning analytics functions. It provides a set of collaboration tools like discussion forums, group chats, video conferencing, and file sharing. Unfortunately setting up Open EdX is technically complex so it should be done by staff with extensive Linux experience.

[1] https://open.edx.org/

4. **MOOCs**

MOOCs (Massive Open Online Courses) are free and widely accessible online courses offered by various educational institutions and organizations. These courses are designed to attract a large number of participants from around the world, with no enrollment restrictions. MOOCs are often offered through LMS platforms such as OpenEdX, Coursera, edX, and Udemy. They can be of different types, from introductory courses to advanced programs.

What are MOOCs?

Delivery of online education virtually to anyone - without time or space limit. It is "open", free, free (most of the time).

How can I integrate MOOCs into my Moodle courses?

There are two methods:

1. ***Active follow-up of a MOOC course, at the student's choice and commenting on the course elements.***

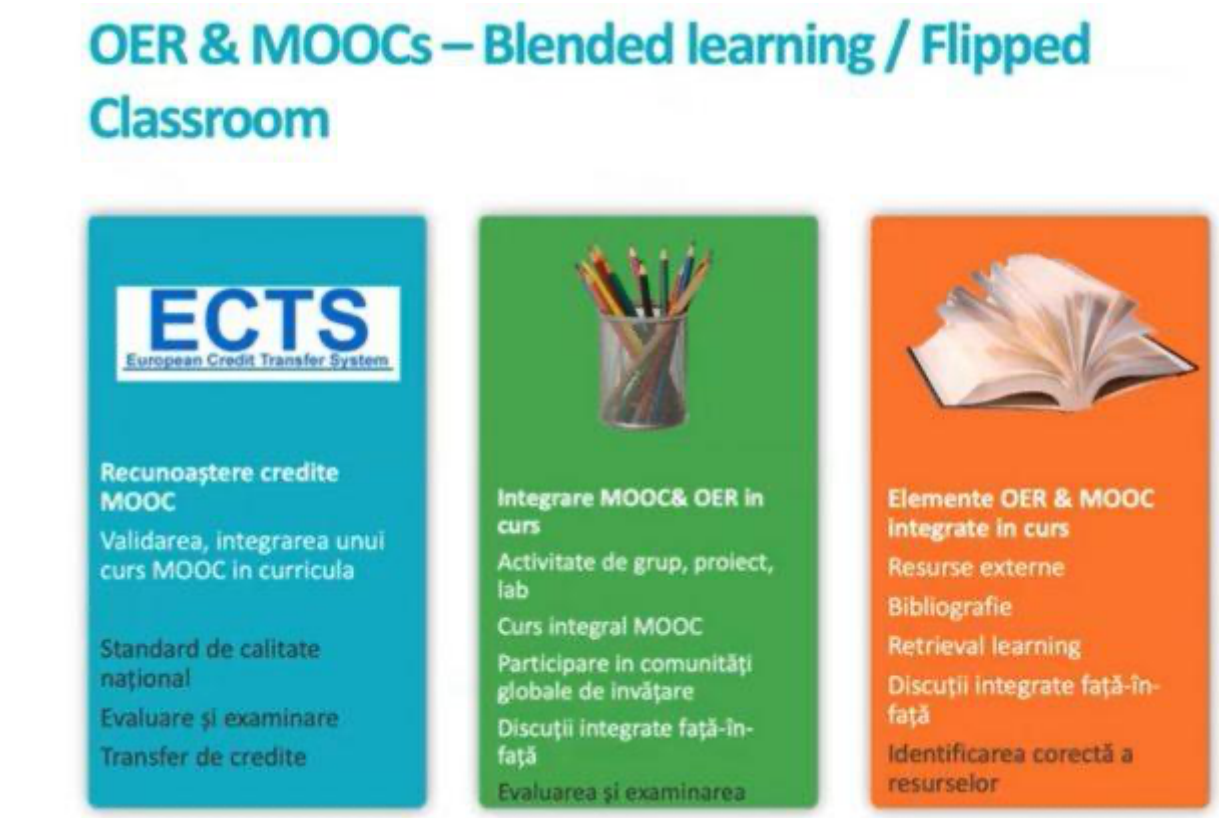
Steps to implement this method:

1. **Identify the curricula which you want the student to follow.**
2. **creator a list with these courses in your university LCMS, in a web page.**
3. **After that, create one Choice (Choice).**
4. **Create a Blog or Wiki, in the same course area, for content created by students.**
5. **At the end, give them the opportunity to upload one final report and achieve a presentation based on the report.**

2. ***Students creating OER - students create an OER based on a specific topic, indicated by the tutor.***

Steps to implement this method:

1. **Indicate the topics.**
2. **Students need to analyze, research, to synthesize and to present a topic of those provided.**
3. **place time and space limit for synthesizing information.**
4. **Students must use digital tools to create the OER.**
5. **At the end, the validation should be done by colleagues, together with the teacher.**



List of MOOCs:

1. **Coursera**
2. **Udacity**
3. **Udemy**
4. **edX**
5. **Future Learn**
6. **Code Academy**
7. **Cambridge University Press**
8. **MIT Press On**
9. **Polytechnic Publishing House**
10. **Iversity**
11. **iMooX**
12. **Fun MOOC**
13. **ACM Communications**
14. **IEE**
15. **UniCampus**
16. **Digital Workshop**
17. **Class Central (platform that centralizes different MOOC courses)**

List of tools for reusable open educational resources:

1. **SPARC**

2. MERLOT
3. EDEN
4. KHAN Academy
5. OER Commons (the largest open resource library)

5. **OER and OER Commons**

(context - how and where the tools are used)

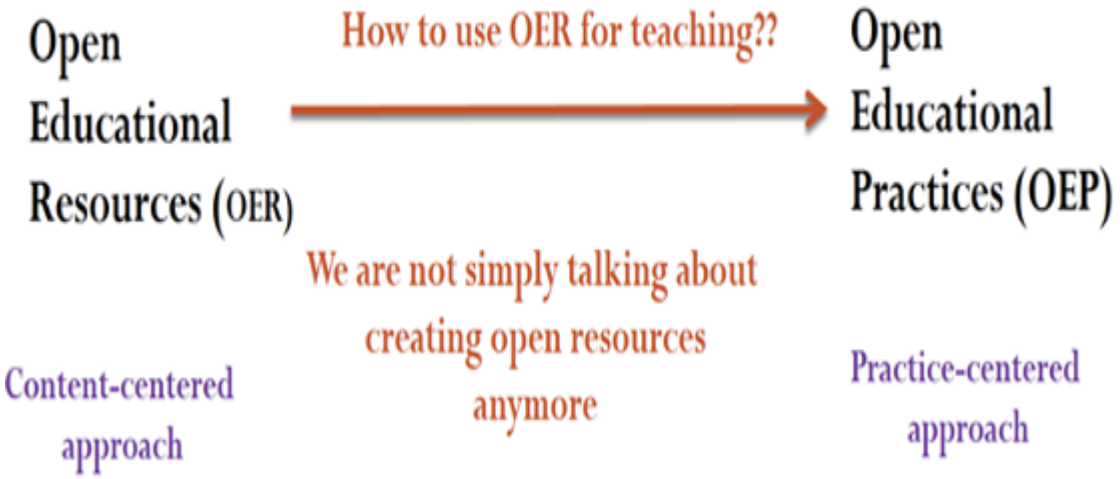
Open Educational Resources (OERs)

Open Educational Resources (OER) are freely and publicly available 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, reuse, modification, and sharing with others.

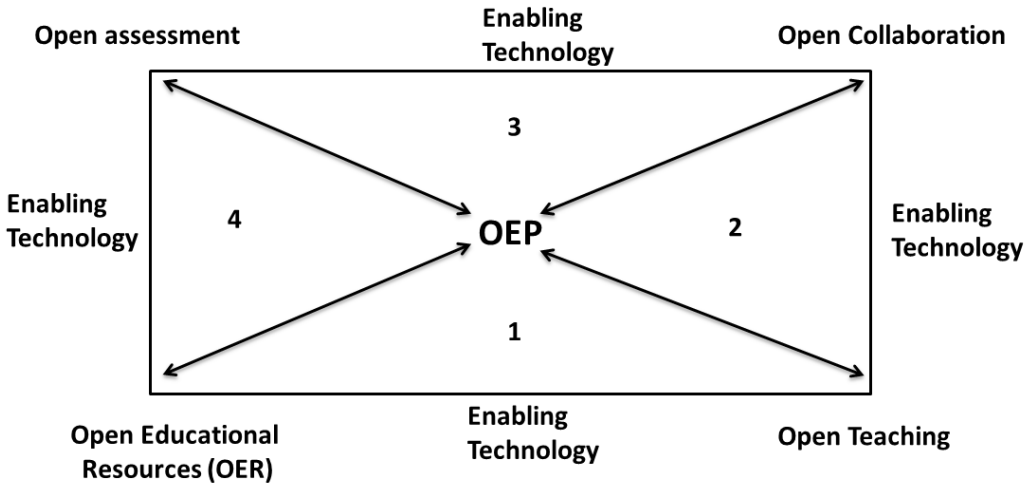
OER is learning, teaching, and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license that permit no-cost access, [reuse], [repurpose], adaptation, retention and redistribution by others (Stracke et al., 2019; UNESCO, 2019).

OER Authoring Tools: Authoring tools that enables users to create OERs, including open contents – DLR (e.g. images, videos, texts, animations and audios) and open online courses. Wikis are already extensively used in many higher education programmes for educational purposes, and are one of the authoring tools being used to generate 'open' content (UNESCO, 2015).

OER Repository: A place on the internet as well as in the physical world for storing digital OER for later search and retrieval, such as MIT OCW (http://ocw.mit.edu) and OpenLearn (http://openlearn.open.ac.uk) (UNESCO, 2015). OER Directory Sites: OER directory sites do not act as a repository, but have identified quality OER and store them in a database of web links, such as **OER Commons** (www.oercommons.org) MERLOT and Commonwealth of Learning (www.col.org/OER) (UNESCO, 2015).



Open Educational Practices (OEP) is all about sharing and developing best practice in education in an open and accessible manner. Open Educational Practices (OEP) – including open pedagogy, open collaboration, and open assessment – should be implemented to keep the learners motivated and engaged in online learning. https://link.springer.com/referenceworkentry/10.1007%2F978-981-287-532-7_710-1



1. OER-Enabling technology-Open teaching
2. Open teaching- Enabling technology-Open collaboration
3. Open collaboration- Enabling technology-Open assessment
4. Open assessment- Enabling technology-OER

How to use OER?

Once you have created your digital educational resources, which can be from text to multimedia resources, as video, animation, even an AR or VR, you will need to publish it on different platforms and then integrate it on your institution learning management system. We recommend that you publish the digital educational resources with creative commons license as an open educational resource OER.

The creator of the digital learning resources decides what license to assign and where to publish the resource, which can be:

- limited publishing in the own educational institution digital repository / library or learning management systems LMS
- Extended publishing in external digital repositories, open or not
- Mixed publishing - in closed environment (e.g. your university LMS) and in open digital repository (e.g. MERLOT)

Text

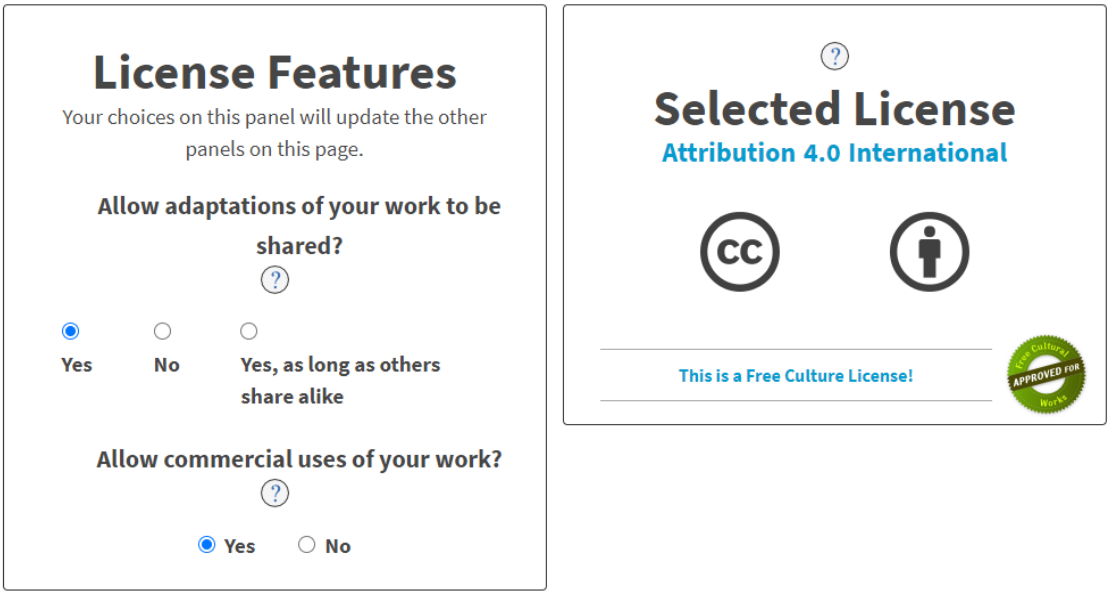
Digital Learning resources as text can be published easily online in either courses or other mediums. If the publication is intended to allow high visibility and/or shareability then a Creative commons license is recommended. https://creativecommons.org/share-your-work .

The recommended CC publication in CC Wikimedia https://commons.wikimedia.org/.

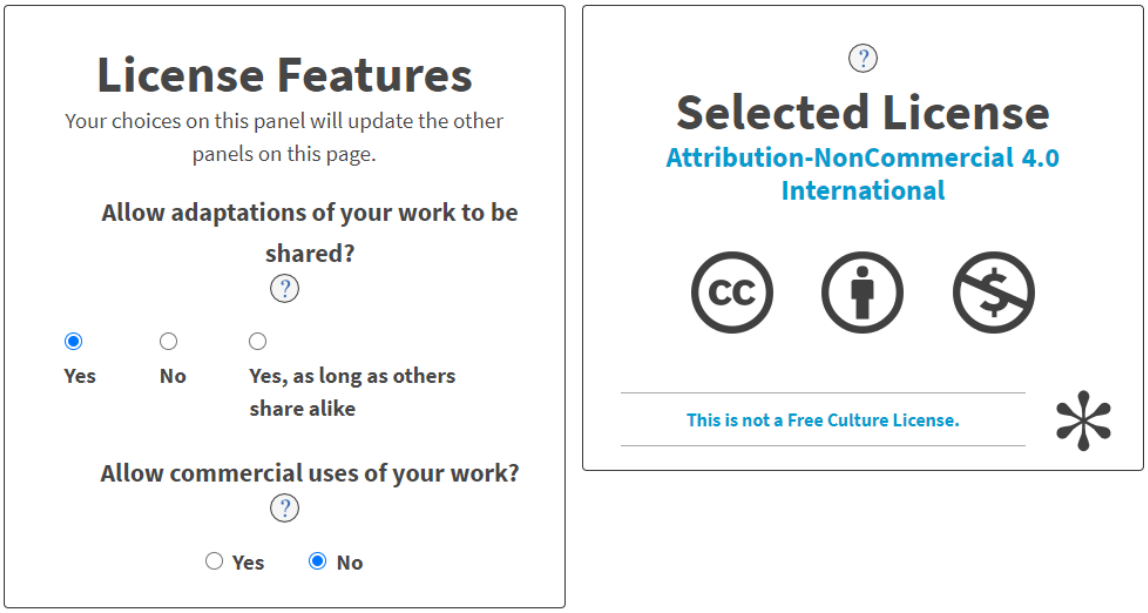
And here are some platforms that allow instant CC publishing.
https://wiki.creativecommons.org/wiki/HOWTO_Publish.

Image

The creator of the digital learning resources decides what license to assign. You can choose your licence from here: https://creativecommons.org/licenses/ and can just insert the image in your resource, if the resource is an image, video animation. You can also use the licence chooser from Creative Commons: https://creativecommons.org/choose/.



CC BY licence



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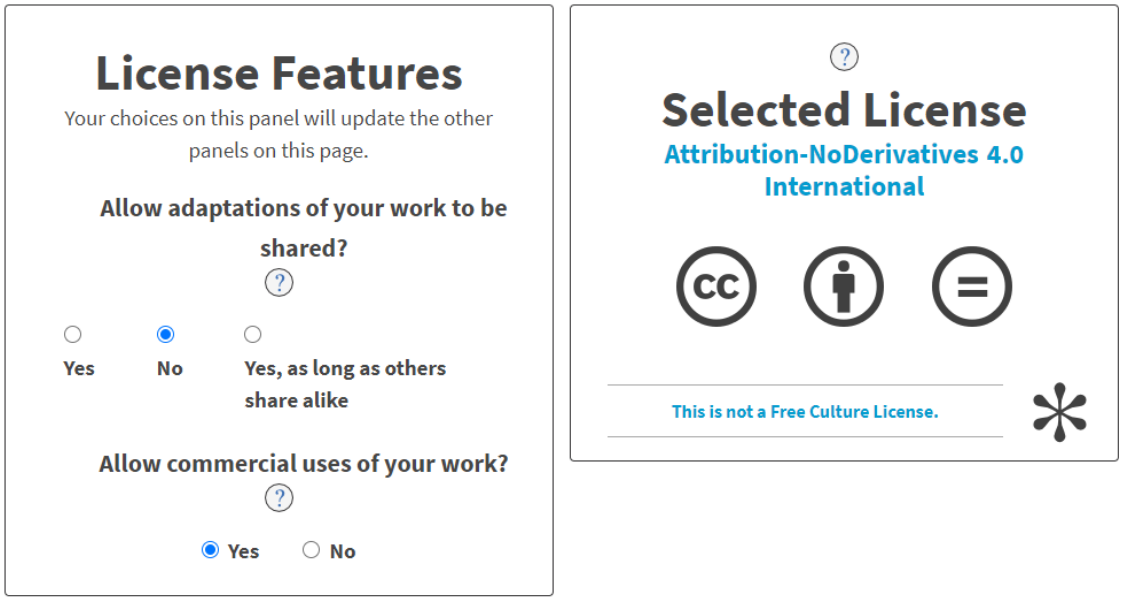

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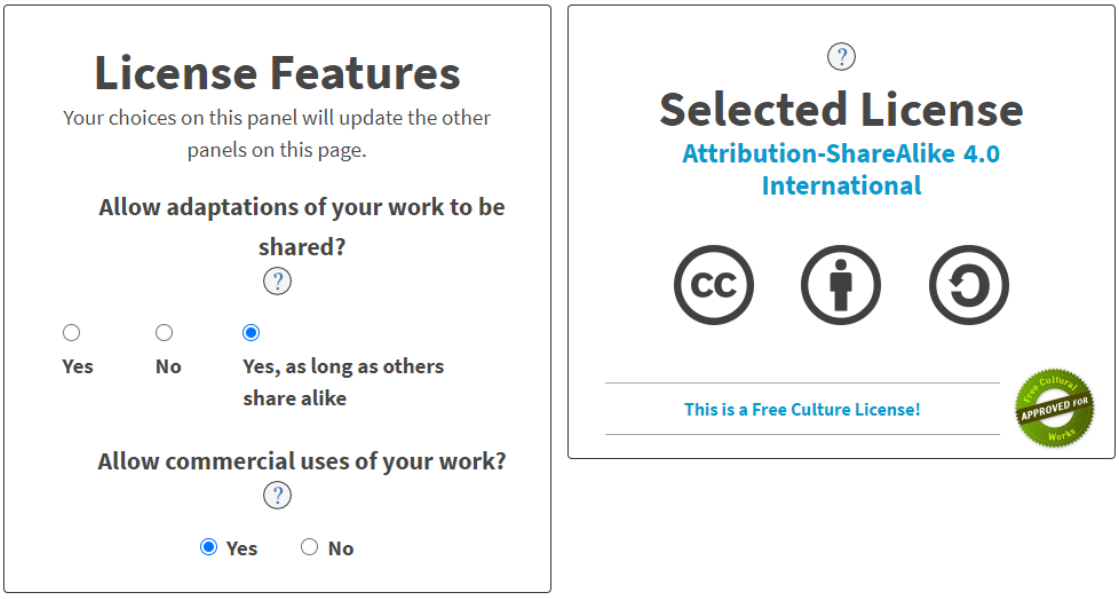


CC BY SA licence

Some content creators for video, ppt, etc, allow you to select in the metadata/settings when you produce/edit the resource. When you publish the resource online, all publishers have the possibility in settings to set up the license, and they can select from there the correct license.

We recommend you also read these guides:

What to consider when creating an OER

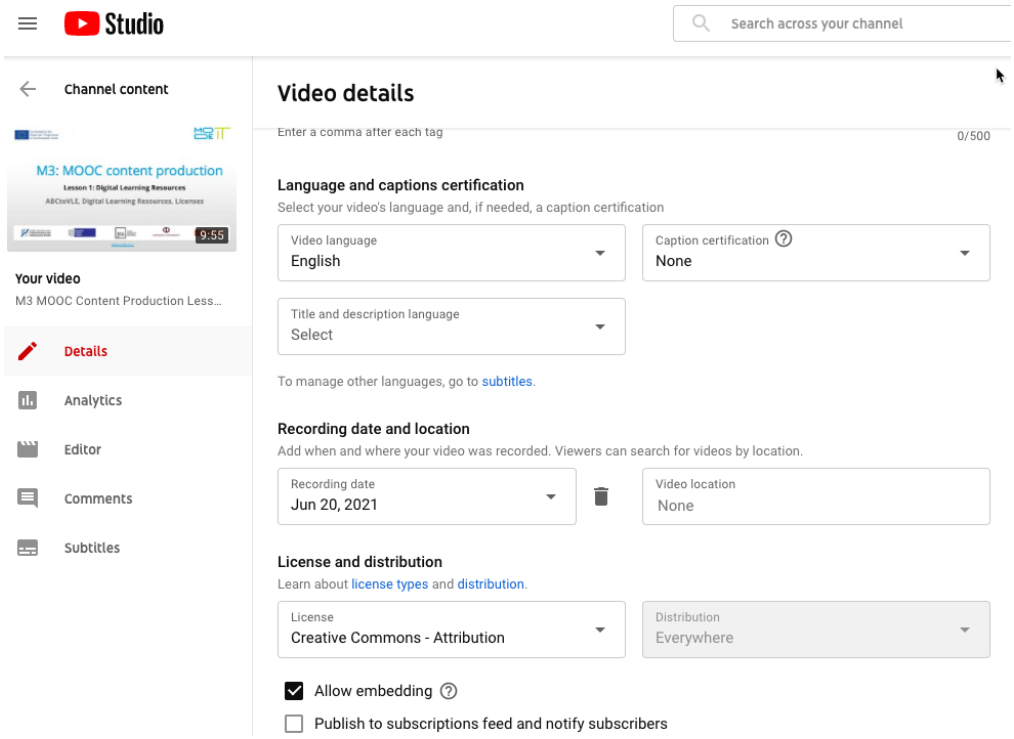
Choosing a Creative Commons Licence for your resource

Adding a Creative Commons Licence to your resource

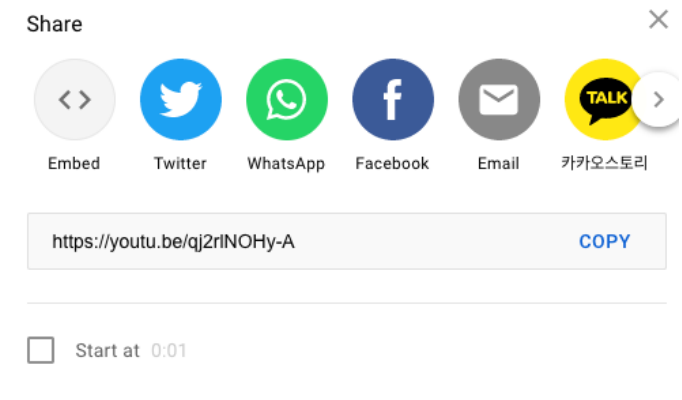
[Where to share your open educational resources]

Video

Videos need to be published online on a virtual hub like YouTube. When you publish a video in Youtube Studio, you will be prompted also with the fields of “license” and here the best will have to assign a creative commons license, as well as setting the caption and all of the other metadata, as requested by the platform.



The video and any other multimedia digital educational resource can be Integrated in your own LMS (as it will be exemplified in Module 4) by using the option of “Embed” and the copy the <iframe..> HTML code and insert it in the HTML editor of your desired resource in your LMS.



H5P

Some of the LMS will allow you to use H5P for publishing your video artefacts, directly in the LMS. If not, you can still produce your H5P artefact directly online. Information and tutorials https://h5p.org/ . With H5P, a easy to use additional plugin you can create richer HTML5 content in several existing publishing platforms or LMS, as well as Share content seamlessly across any H5P capable site and Reuse and modify content in your browser. You can follow the tutorial offered in this lesson and see the examples of videos with bookmarks in this lesson.

OER Commons

OER Commons is an online platform that provides access to a vast library of open educational resources (OER). These resources include freely accessible teaching and learning materials, such as textbooks, lesson plans, assessments, and multimedia content, which can be used, adapted, and redistributed by educators, students, and self-learners. The platform encourages collaboration by allowing users to create, share, and review educational content, supporting both traditional and non-traditional educational environments.

OER Commons is part of the broader open education movement, promoting the sharing of knowledge globally without the barriers posed by expensive textbooks or proprietary materials. The platform also features tools for educators to curate and customize content for specific educational needs, allowing for personalized and flexible teaching strategies. Additionally, it supports collaborative projects and professional development opportunities, fostering a global community of educators.

By leveraging open licenses like Creative Commons, OER Commons helps break down barriers to education, making quality resources more accessible and adaptable for diverse learning needs and contexts.

Information https://oercommons.org/ and many resources are here https://oercommons.org/oer

6. Course check

Open Digital Tools for teaching : Check your understanding

Q1. Which of the following Learning Management Systems is open-source?

A. **Moodle**
B. **Sakai**
C. Blackboard
D. Google Classroom

Q2. What are MOOCs?

A. **free and widely accessible online courses offered by various educational institutions and organizations**
B. professional courses offered by companies that require subscriptions to access
C. officially recognized and accredited program studies that are part of Higher Education Institutions curricula
D. search engines for OERs

Q3. What are OERs?

A. **Open Educational Resources (OER) are freely and publicly available 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, reuse, modification, and sharing with others.**
B. **Open Educational Resources (OER)** are resources you can share with others.
C. Open Educational Resources (OER) are educational resources everybody can create but you can't share.
D. A type of open-source licensing

Feedback

Module evaluation survey

Module 3 Open Digital Tools for teaching creation

Welcome

Welcome to the Open Digital Tools for teaching communication, where you will learn about the open-source tools.

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.

1. Course overview

Aim

In this course you will:

- Review what you already know about Open Digital Tools
- Learn about video conferencing technologies
- Learn how use Interactive Learning Tools
- Learn how to use tools necessary for conducting online classes
- Learn how to browse on Moodle Forum
- Learn how to leverage Moodle Chat, Moodle Message and Moodle Blog
- Learn how to bring together data, code, and prose, to tell an interactive, computational story
- Learn how to integrate digital whiteboards with other video conferencing and screen sharing platforms

Estimated time

The estimated time to complete this course is 3 hours.

2. Learning outcomes

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

- Use, develop and evaluate Open Digital Tools for teaching communication in school practice. More specifically you will be able to:
  - **recognise** Open Digital Tools for teaching communication based on their utility
  - **recall** specific technologies and systems and platforms and their purpose
  - **select** specific Open Digital Tools for teaching Communication to meet your instructional objectives and student learning needs

Review, learn and practice

Tutorial: Open Digital Tools for teaching communication

1. **Focus for this tutorial**

In this tutorial we explore:

- Video conferencing/VirtualClassroom
- Big Blue Button
- Edumeet
- Moodle Forum
- Moodle Chat
- Moodle Message
- Moodle Blog
- Jupyter notebook
- Microsoft Whiteboard
- Skype, Webex, Zoom, Teams - brief mention
- Skype
- Zoom
- Microsoft Teams
- Webex
- Engage your learners (ideas for teaching)
- Quizz

2. **Video Conferencing / Virtual Classroom**

Video Conferencing refers to technologies that enable real-time communication between people in different locations, using the internet and camera and microphone devices. Video conferencing platforms offer features such as screen sharing, text chat, recording and integration with other applications. Some of the most popular video conferencing platforms are Zoom, Microsoft Teams, Google Meet and Skype.

Virtual Classroom is an online learning environment that uses videoconferencing technology to simulate a traditional classroom space. Virtual classroom platforms offer additional features such as whiteboard, collaboration tools, assessments, and integration with learning management systems (LMS). Some popular virtual classroom platforms include Blackboard Collaborate, Adobe Connect and Zoom Rooms.

In essence, videoconferencing is a core technology for real-time communication, while the virtual classroom is an online learning environment that builds on videoconferencing and provides additional features to create an effective and interactive learning experience.

3. **Big Blue Button**

BigBlueButton is an open-source web conferencing system specifically designed for online learning and digital open education. It provides a virtual classroom environment that facilitates real-time communication and collaboration between educators and students.

It allows for Real-Time Communication, since it supports live audio and video communication, allowing educators to conduct virtual lectures, seminars, and meetings. It also includes public and private chat options, enabling participants to communicate through text during sessions.

The tool provides Interactive Learning Tools. Instructors can use an interactive whiteboard to draw, highlight, and annotate content during live sessions. This feature can be used collaboratively with students. Educators can share their screen to display presentations, software applications, or other educational content in real time. Instructors can also engage students with live polls and quizzes, helping to gauge understanding and encourage participation.

BigBlueButton promotes content sharing: teachers can upload and display slides, PDFs, or other documents directly within the platform.The tool also allows users to create breakout rooms where smaller groups of students can collaborate and discuss topics before rejoining the main session.

Sessions can be recorded and made available for later viewing, which is useful for students who need to review the material or for those who couldn't attend the live session.

BigBlueButton can be integrated with various LMS platforms such as Moodle, Canvas, and Sakai. This integration enables seamless access to virtual classrooms directly from within the LMS, providing a cohesive learning experience.

Role of BigBlueButton in Digital Open Education

As an open-source platform, BigBlueButton is freely available, making it accessible to educational institutions with limited budgets. This aligns with the principles of open education, ensuring that quality virtual learning tools are available to a broader audience.

BigBlueButton plays a critical role in supporting **synchronous (real-time) online learning**, enabling live interaction between educators and students, which is essential for fostering engagement and community in digital education environments.

Being **open-source**, BigBlueButton can be customised to meet specific educational needs. Institutions can modify the software to fit their pedagogical approaches, branding, and technical requirements.

BigBlueButton is well-suited for **remote learning scenarios**, providing the tools necessary for conducting online classes. It also supports blended learning models, where in-person and online instruction are combined.

The open-source nature of BigBlueButton means it benefits from a **global community** of developers and educators who contribute to its continuous improvement. This collaborative development ensures the platform evolves to meet the changing needs of digital education.

In summary, BigBlueButton is a powerful tool for delivering live, interactive online education. It supports the goals of digital open education by providing an accessible, customizable, and feature-rich platform that enhances the learning experience for students and educators alike.

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

4. **Edumeet**

EduMeet is an open-source web conferencing tool designed for educational purposes. It provides a platform for virtual classrooms, meetings, and collaborative learning environments. Here are some key aspects of EduMeet:

Features

- Video Conferencing: Supports video and audio calls for multiple participants.
- Screen Sharing: Allows users to share their screens, which is essential for presentations and collaborative work.
- Chat: Text chat functionality for participants to communicate alongside video and audio.
- Breakout Rooms: Smaller group discussions within the main meeting.
- Recording: Option to record sessions for later review.
- Whiteboard: Interactive whiteboard for collaborative drawing and writing.
- Integration with LMS: Can be integrated with Learning Management Systems (LMS) like Moodle for seamless use in educational settings.

5. **Moodle Forum**

Moodle Forum is an online discussion tool integrated into the LCMS Moodle platform. Moodle Forums allow teachers and students to participate in asynchronous discussions, share ideas and provide feedback. They can be organized into different categories and sub-categories to facilitate discussions on specific topics.

How to write a forum ad, video tutorial:

https://www.youtube.com/watch?v=n4rDt9hArS0&ab_channel=CeLUPT

From the course page go to the Announcements/Forum link.

From the forum page, to add a new post/discussion topic, go to the add topic link.

Enter the title of the announcement and a description of the announcement, then click Submit forum post.

You should be directed to a page announcing that the announcement has been successfully added.

6. Moodle Chat

Some activities that involve closer collaboration between participants sometimes require synchronous, real-time communication, without the delays that occur when using a forum or email. The use of dedicated instant messaging services (Yahoo Messenger, MSN Messenger, GTalk, etc.) requires that those involved in the communication all have an account with the same service.

By using the platform's chat tool, users do not require additional credentials. In addition, this activity is metered by the system, contributing to a better evaluation of the activities carried out within the application.

Teachers can create a dedicated chat activity, scheduled at a certain time, which can then be

even assessed and marked.

7. Moodle Message

The platform has its own Private Message (PM) delivery system. Any user can send a short message to another user of the application, which they can view and then reply to.

It is the most direct method of interpersonal communication within the platform and perhaps the most effective. Users have the option to be notified of a new message by an email (a valid email address is required when registering on the platform) if they are not logged in to the platform for a certain period of time.

8. Moodle Blog

In addition to its role as a personal tool for disseminating the opinions of each individual user (with a strong social nuance), the blog also plays an important role in the courses by creating types of activities that require the posting of longer texts, with embedded images, which can then be discussed by other participants in the comments section.

As a social tool, blogs can be accessed and used by individual users in their personal area of the platform. These blogs can be followed by anyone with an account on the platform, or, optionally, by other internet users.

Course blogs are restricted by parameters set by the teacher and are usually only available to course participants.

9. Jupyter notebook

Jupyter Notebook is a free, open-source, interactive web tool software that creates a Jupyter notebook. A Jupyter notebook is a document that supports mixing executable code, equations, visualisations, and narrative text. This marriage of content and code makes for a powerful new form of data-based communication. Specifically, Jupyter notebooks allow the user to bring together data, code, and prose, to tell an interactive, computational story. Whether analysing a corpus of American Literature, creating music and art, or illustrating the engineering concepts behind Digital Signal Processing, the notebooks can combine explanations traditionally found in textbooks with the interactivity of an application.

The main components of the whole Jupyter environment are, on the one hand, **the notebooks** themselves and **the application**. On the other hand, you also have a notebook **kernel** and a notebook **dashboard**.

The web application is a browser-based tool for interactive authoring of documents which combine explanatory text, mathematics, computations and their rich media output. As a “web application”, in which you can create and share documents that contain live code, equations, visualisations as well as text, the Jupyter Notebook is one of the ideal tools to help you to gain the data science skills you need. As a server-client application, the Jupyter Notebook App allows you to edit and run your notebooks via a web browser. The application can be executed on a PC without Internet access, or it can be installed on a remote server, where you can access it through the Internet.

As a **"notebook"** or "notebook document" it consists of documents that contain both code and rich text elements, such as figures, links, equations, ... Because of the mix of code and text elements, these documents are the ideal place to bring together an analysis description, and its results, as well as, they can be executed to perform the data analysis in real time. The Jupyter Notebook App produces these documents.

A **kernel** is a program that runs and introspects the user’s code. The Jupyter Notebook App has, by default, a kernel for Python code, but there are also kernels available for other programming languages.

The **dashboard** of the application not only shows you the notebook documents that you have made and can reopen but can also be used to manage the kernels: you can see which ones are running and shut them down if necessary.

Supporting Teaching & Learning

- Jupyter Notebook can be used to organise materials and objects for students, perform living coding, support self paced learning, grade homeworks.
- During classes all notes can be displayed on a web page, so both students and teachers can play with it.
- The entire contents of a notebook is composed of only cells. Everyone can use 'cell' with both text or code.
- Widgets provide the opportunity for learners and instructors to interact with code outputs, such as charts and tables.
- There are hotkeys in cell's like TAB for autocomplete and SHIFT-TAB for full documentation.
- Magics are meta-commands that only function within Jupyter and allow a user to access language/kernel specific features.
- They are keeping Jupyter's notebooks under version control.
- It is possible to test notebooks with restart and run all.
- There are communities which contribute extensions that add functionality to Jupyter.
- It is easy to convert to other formats from Jupyter Notebook.
- Jupyter allows teachers to have conversations between students and data.

https://www.youtube.com/watch?v=up1UnUoVTWQ

10. Microsoft Whiteboard

Microsoft Whiteboard is a digital application that functions like a traditional whiteboard, but is hosted virtually. Digital whiteboards can integrate with other video conferencing and screen sharing platforms to allow for collaboration even when you are not physically in the same room.

A virtual whiteboard has multiple colours, shapes and templates to choose from and allows whiteboards to be saved in shareable files for easy access in the future. Microsoft whiteboard can enhance a virtual or in person meeting by encouraging collaboration. A whiteboard can help people visualise a process. Whiteboards increase collaboration by allowing participants to easily add ideas to the whiteboard with sticky notes or coloured markers.

Microsoft whiteboard can help increase productivity as it allows users to easily draw processes with different shapes and colours. A virtual whiteboard further increases productivity as a user can easily copy or remove parts of the whiteboard and even save the file for future use.

https://www.youtube.com/watch?v=3YEJn0MkuBM

11. **Skype, Webex, Zoom, Teams**

Skype

Skype, a proprietary communication tool owned by Microsoft, is a comprehensive platform that supports a wide array of features for both personal and professional use. It enables high-quality video and audio calls, instant messaging, and screen sharing, making it ideal for remote meetings, interviews, and collaborative work. Skype also offers file sharing, call recording, and live subtitles, enhancing its functionality for diverse communication needs. Additionally, it allows users to make affordable calls to landlines and mobile phones through Skype to Phone. The platform integrates seamlessly with Microsoft Office and other products, providing added convenience for users within the Microsoft ecosystem. Skype's cross-platform availability on Windows, macOS, Linux, iOS, and Android, along with its user-friendly interface, makes it accessible and easy to use for a global audience. While it is widely adopted for personal communication, businesses and educational institutions also leverage its capabilities for virtual classrooms, professional development, and customer support, highlighting its versatility and broad applicability in various contexts.

https://support.skype.com/en/skype/all/

https://www.youtube.com/c/Skype/playlists

How to find your way around on Skype for Windows

https://www.skype.com/en/features/

Making a video call with Skype

Zoom

Zoom is a popular video conferencing platform that allows real-time communication between people in different locations. It is used for both personal and professional purposes, including education, business and events. Zoom is known for its ease of use and reliability, making it a popular choice for a variety of purposes.

Zoom video conferencing user tutorial

https://www.youtube.com/watch?v=VQRilPlOm8o&ab_channel=CeLUPT

Steps to install and configure Zoom:

1. Downloading the Zoom software on the device from which the video conference will be joined (Windows, macOS, Android or iOS)
2. Testing the internet connection and the audio (microphone+headphones/speakers) and video (webcam) system. Click for creating a test conference.

The steps for running the video conference itself:

1. Accessing the video conference link, which was generated by the teacher or Zoom Pro account administrators. This will open the already installed application.
2. Authentication in the video conference is done with the email and password of the personal Zoom account or with the email and password previously received from the administrators of the Zoom Pro accounts. Click here for video explanations on accessing the video conference.

Microsoft Teams

Microsoft Teams is a real-time collaboration and communication platform developed by Microsoft. It is an integral part of the Office 365 productivity suite and offers a number of useful features for teams and organizations. Microsoft Teams is often preferred by organizations that use other Microsoft products because it provides an integrated collaboration experience. However, it can be more complex to use than some simpler collaboration platforms.

Tutorial for using the Microsoft Teams solution for online teaching

The Microsoft Teams app can be downloaded here:

https://products.office.com/ro-ro/microsoft-teams/download-app

Webex

Webex is a cloud-based platform that supports web conferencing. It aims to be a total solution for pre-conference planning, conferencing, and post-conference follow-up and action.

It offers advanced functionalities, such as: cloud calling, holding, dialling, resuming, forwarding, transferring, do-not disturb mode, virtual receptionist, and more.

https://www.youtube.com/watch?v=EPB7AiaAlf8

Course check

Open Digital Tools for teaching communication: Check your understanding

Q1. Which of the following tools are usually used for videoconferencing in learning?

A. **Edumeet**
B. **BigBlueButton**
C. Moodle Forum
D. Google Documents

Q2. How can Jupyter Notebook be used as a tool for educational purposes?

A. **It organises materials and objects for students, perform living coding, support self paced learning, grade homeworks**
B. **It provides the opportunity for learners and instructors to interact with code outputs, such as charts and tables**
C. **It supports mixing executable code, equations, visualisations, and narrative text**
D. It offers a full suite of Student Information Services

Q3. What are some common factors of ZOOM, Skype, Webex and MS Teams?

A. They can be used as video conferencing tools
B. There are free tier options for personal use
C. They are all open-source
D. They can be easily integrated into any LMS

Feedback

Module evaluation survey

Module 4 Open Digital Tools for teaching creation

Welcome

Welcome to this self-paced course

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.

1. **Course overview**

Aim

In this module you will learn:

- the basics of Open Digital Tools for teaching creation
- the principles of creation OERs
- how to engage your learners

Estimated time

The estimated time to complete this course is 3 hours.

2. **Learning outcomes**

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

- **explain** the Principles of creation OERs
- **use** open frameworks and open-source platforms for teaching creation
- **create** interactive learning experiences using digital tools

Review, learn and practice

Tutorial: Open Digital Tools for teaching creation

1. **Focus for this tutorial**

In this tutorial we explore:

- Principles of creation OERs

- Interaction H5P
- Office tools (LibreOffice)
- Microsoft Forms
- Blogging (WordPress)
- Blogs - what they are
- Blogging Platforms
- WordPress Tutorials
- Collaboration Moodle choice, Wiki
- Cum creezi o resursă de tip "alegere"
- Introduction to Wikis
- Graphics (GIMP) Openshot
- Presentation (prezi)
- Audio (Audacity)
- Equalization
- Reverb
- Video (Openshot/OBS)
- Playback (VLC media player)
- Evaluation Kahoot
- Kaltura
- Engage your learners (ideas for teaching)
- Quiz

2. Principles of creation OERs

H5P (HTML5 Package) is an open-source framework for creating interactive content for the web. It is widely used in education to create engaging and effective learning materials. H5P is a great option for educators who want to create interactive and engaging learning materials. It is a versatile tool that can be used to create content for different learning levels and subjects.

Video tutorial for adding H5P interactive content in progress:

How to add H5P Interactive content to a course

To add H5P interactive content to a course, follow these steps:

Open the list of activities and resources that can be added to a course and choose "Interactive Content".

Fill in a content description and choose the type of interactive content you want (video, quiz, timeline of events, etc.).

Fill in the required information for the selected content type and save the resource.

Examples of H5P can be found here: https://h5p.org/content-types-and-applications

Active learning is a popular and proven method used in contemporary educational design and practice.

H5P is a modular system that includes a variety of content types and frameworks that are specifically developed for use in e-learning. H5P can be incorporated with learning tools and content management systems, allowing teachers to create rich interactive content that students can access on laptops, tablets, and smartphones.

There are many content types useful for learning in H5P.

1. Course presentation

When you want to develop a learning material using a structured and interactive format, the best way you can do it is developing a course presentation. Learners click through slides to get a sense of what they're studying while also taking quizzes and watching videos.

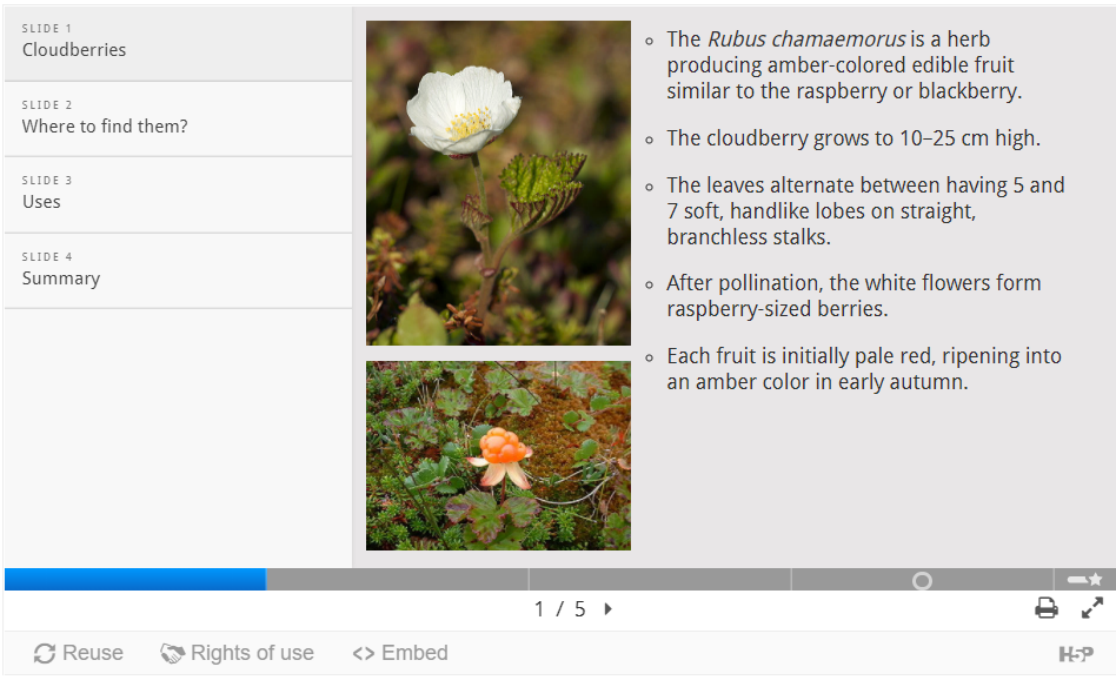


Fig 1. Course presentation slide example

The presentation content form can be used to present a subject using keywords, photographs, video clips, and audio clips. You can combine these components into a rich mixed media learning experience, and you can likewise add different test inquiries.

Step – by – step tutorial here

2. Interactive Video Tutorial

For a better learning experience you can add interactions overlaying video clips using the Interactive video content form. While watching the video, interactions such as images, elaborating text, links, and quizzes appear.

When you already have a video clip that you want to enhance with interactive elements, interactive videos are ideal.

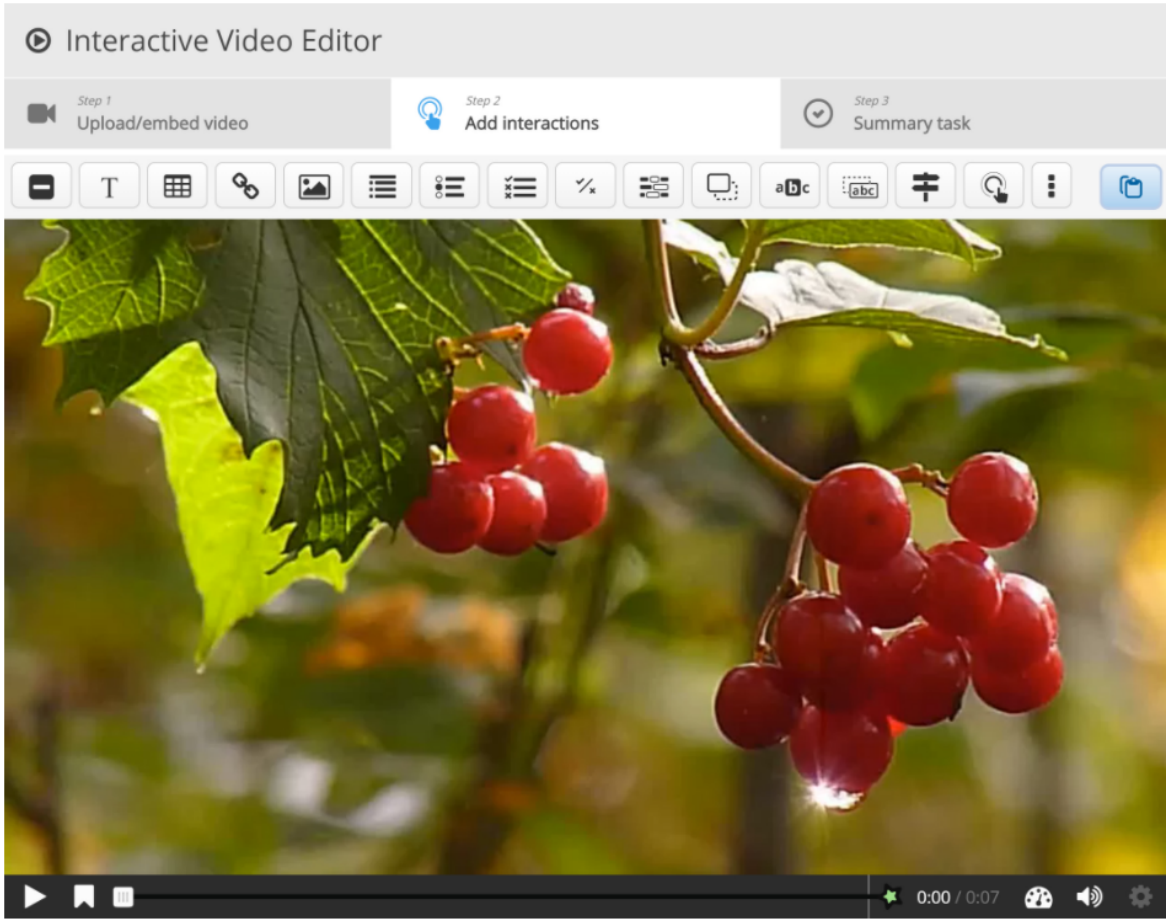


Fig 2. H5P Interactive video editor

You can support differentiated learning by including in-depth information such as images, tables, text, and links that the learner can engage with when watching a video.

Step – by – step tutorial here

3. Question Set

The question set enables eLearning developers to generate a sequence of different quiz styles, such as multiple-choice questions, fill-in-the-blank questions, and drag-and-drop. The question set provides the learner with both customized text feedback and video feedback.

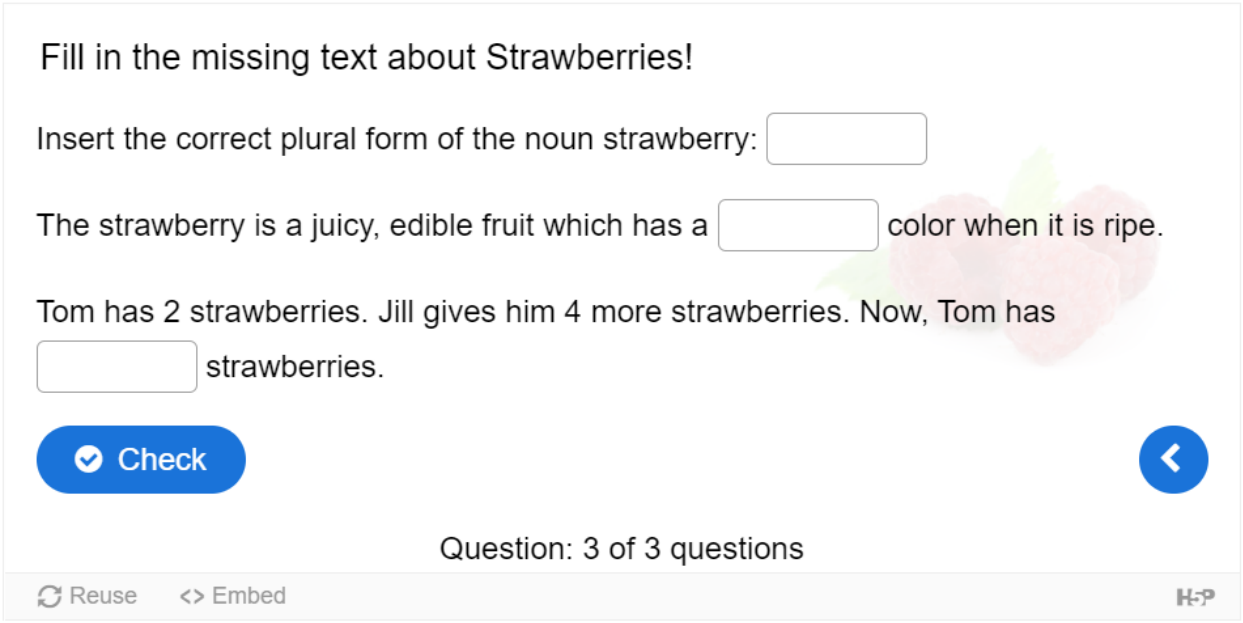


Fig 3. H5P Question set - Fill in the blanks - example

Using Question sets when we want to test the students' ability to replicate core concepts from a compound learning material. Question sets may be used as end-of-chapter assessments or as a final course exam, for example. To add diversity to your Questions sets, you can use a variety of quiz formats, such as Multichoice, Fill in the blanks, and Drag and Drop questions.

Step – by – step tutorial here

4. Image Hotspots

You can overlay hotspots on images and graphics using the Image hotspots content class. The user clicks on the hotspots to reveal the corresponding text.

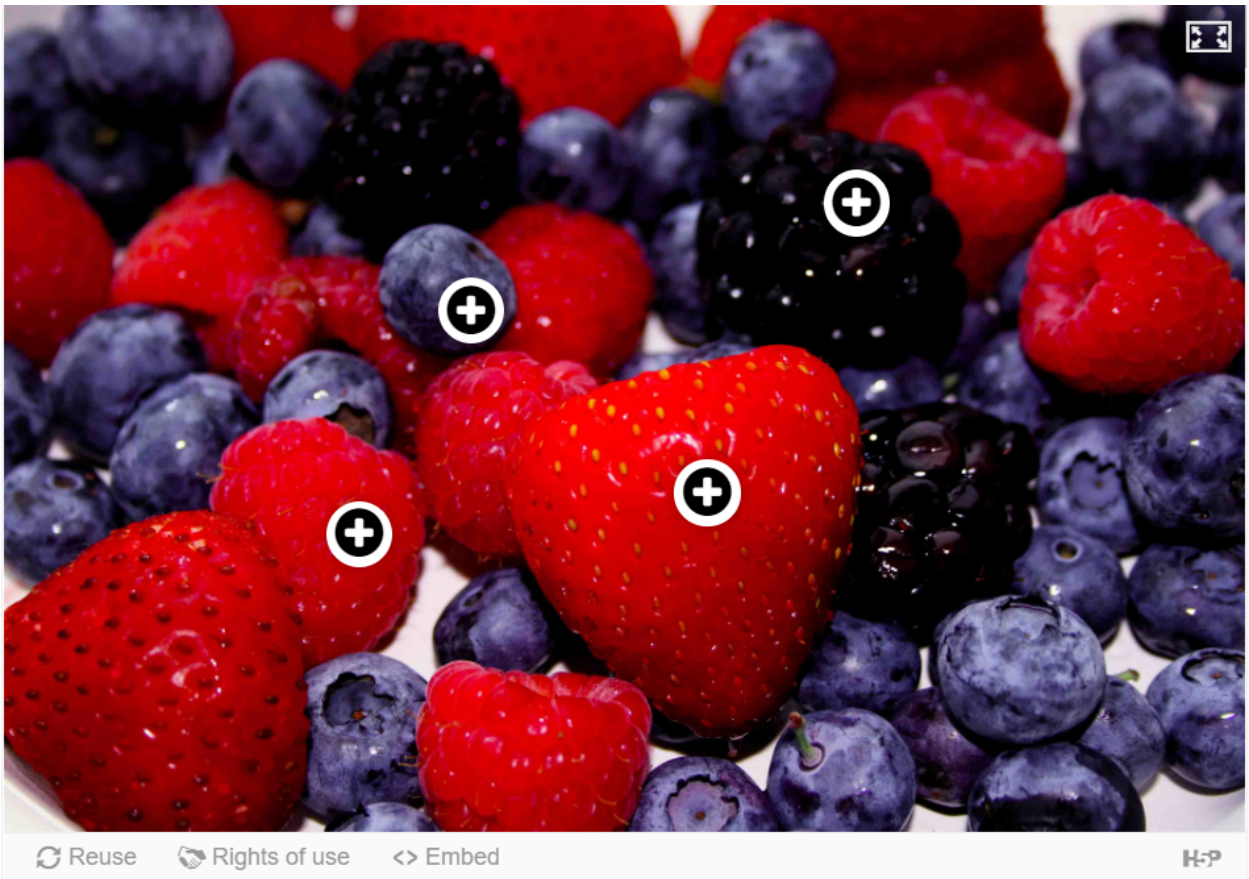


Fig 4. H5P Image Hotspots example

Image hotspots can be useful for making infographics quickly and easily . Use any picture and add points of interest and detailed information about the features depicted. Interacting with the picture engages the students and makes them more curious.

Step – by – step tutorial here

3. **Office Tools *(LibreOffice)***

Office tools, such as word processors, spreadsheets, presentation software, and collaboration platforms, can be invaluable for professors in creating effective and engaging course materials.

The main types of tools are described below.

1. Word Processors (Microsoft Word, Google Docs)

By creating written content, word processors are ideal for drafting syllabi, lecture notes, assignments, exams, and other textual materials. They offer features like templates, style formatting, and tables of contents, which help in organising content professionally.

For collaboration and feedback, tools like Google Docs allow multiple users to work on a document simultaneously, making it easier for professors to collaborate with colleagues or teaching assistants. The comment and suggestion features also facilitate peer reviews and feedback on drafts.

Through track changes, professors can easily update and revise course materials while tracking edits, making it easier to manage different versions of a document.

2. Spreadsheets (Microsoft Excel, Google Sheets)

For organising data, spreadsheets are invaluable for managing grades, tracking student progress, or managing research data. Professors can use them to create grade books, calculate scores, and analyse student performance using built-in formulas.

Professors can schedule and plan using spreadsheets to create class schedules, plan course content over the semester, and manage tasks and deadlines.

Also, spreadsheets allow the creation of charts and graphs, which can be included in presentations or handouts to help illustrate data trends or concepts.

3. Presentation Software (Microsoft PowerPoint, Google Slides)

Presentation tools are essential for creating lecture slides that visually support the material being taught. Professors can incorporate text, images, videos, and animations to make lectures more engaging.

Features like hyperlinks, embedded multimedia, and interactive elements can make presentations more dynamic, allowing students to engage with the material in different ways.

Presentations can be easily exported as PDFs or shared online, making it convenient for professors to distribute materials to students before or after lectures.

4. Collaboration Platforms (Microsoft Teams, Google Workspace)

These platforms enable seamless communication with students and colleagues. Professors can use them to share documents, organise virtual meetings, and collaborate on projects or course development.

Platforms like Google Workspace or Microsoft 365 integrate various tools (Docs, Sheets, Slides) into one ecosystem, making it easier to manage course materials and collaborate without switching between applications.

Professors can use built-in tools like task lists, shared calendars, and chat functions to manage class projects, coordinate with teaching assistants, and keep track of course deadlines.

5. Note-Taking and Organization (Microsoft OneNote, Evernote)

Note-taking apps allow professors to gather research, plan lectures, and organise course content in a structured, searchable format. These tools often support multimedia notes, including text, images, and audio clips.

Professors can share notes with students or colleagues, making it easier to distribute supplementary materials or collaborate on course development.

6. Publishing Tools (Microsoft Publisher, Adobe InDesign)

For more visually complex documents, such as brochures, posters, or course handbooks, publishing tools provide advanced layout and design options. Professors can create professional-quality materials that enhance the presentation of course information.

LibreOffice is a free and open-source office suite developed by The Document Foundation. It serves as an alternative to other office suites like Microsoft Office, offering a range of applications for various productivity tasks. LibreOffice is known for its compatibility with Microsoft Office formats, making it a popular choice for individuals and organisations looking for a cost-effective solution without sacrificing functionality.

The software includes built-in charting tools and supports a wide range of extensions to expand its functionality. These extensions can be downloaded from the LibreOffice website or third-party sources.

LibreOffice is available for Windows, macOS, and Linux, making it accessible to users across different operating systems.It uses the OpenDocument Format (ODF) as its native file format, promoting open standards and data portability. The Document Foundation frequently updates LibreOffice with new features, security patches, and performance improvements.

The software has a large, active community of developers and users who contribute to its development, provide support, and create extensions.

LibreOffice is widely used in educational institutions due to its cost-effectiveness, open-source nature, and comprehensive feature set. Professors and students can use it to create and manage documents, spreadsheets, presentations, and more, all without the need for expensive software licences.

https://www.youtube.com/watch?v=AB7TbrkCTSA

https://www.youtube.com/watch?v=4laywFgYRFI

4. Microsoft Forms

Forms is a free tool from Microsoft that gives the user the possibility to create questionnaires, forms and polls. Through Forms it is possible to view the answers, analyse the data and export them to Excel.

The tool is very intuitive and simple. Either in terms of creating a questionnaire and form or during the participation. However, it is beneficial to use the description option (available in the form introduction, in the questions and in the sections) to clarify the participant and avoid filling out the form incorrectly.

Microsoft Forms enhances the formative and summative assessment of students and the implementation of gamification in the classroom, by providing immediate feedback, engaging questions and, consequently, funnier learning and detailed statistics of the answers.

Studies show that students express positive attitudes towards the use of this tool, as it provides original learning experiences, increases levels of motivation and a sense of accomplishment tasks before or within the deadline.

Microsoft provides several online support and explanatory videos on the use of this tool, such as:

- Log in into Microsoft Forms (https://support.microsoft.com/pt-pt/office/iniciar-sess%C3%A3ono-microsoft-forms-620daa7a-3e03-4013-8f92-5cce86210ef6);
- Create a form or questionnaire (https://support.microsoft.com/pt-pt/office/criar-um-novoformul%C3%A1rio-ou-question%C3%A1rio-3c39c220-e30e-401d-bb6f-c1861d5aea01);
- Share (https://support.microsoft.com/pt-pt/office/enviar-um-formul%C3%A1rio-e-recolherrespostas-381935d9-ba9c-429e-b8cb-2de6714a75a0);
- View results (https://support.microsoft.com/pt-pt/office/ver-resultados-do-seuformul%C3%A1rio-22ea518c-b2f6-4824-bf8d-f14a6bba7d3c);
- Add sections (https://support.microsoft.com/pt-pt/office/adicionar-sec%C3%A7%C3%B5esao-seu-inqu%C3%A9rito-ou-question%C3%A1rio-f75b1ca4-bd9b-452c-a83e-38ff5a3b1446);
- Redirect to certain questions (https://support.microsoft.com/pt-pt/office/utilizar-al%C3%B3gica-de-ramifica%C3%A7%C3%A3o-no-seu-formul%C3%A1rio-0a092a1c-8fe4-441c9fc6-cd0aad3b52b2);
- Integration (https://support.microsoft.com/pt-pt/office/integra%C3%A7%C3%A3o-fd5521ecbd27-48ee-8aad-84ffe95c2a8b);
- Formatting (https://support.microsoft.com/pt-pt/office/formatar-499b87a2-7e82-44c5-8a3a026df34982a0);

https://www.youtube.com/watch?v=2B_Q2jY46pY

5. **Blogging *(Word Press)***

Blogging is a modern online communication practice that can be used creatively in an educational context. Through blogging, students can improve their writing, critical thinking and communication skills, while teachers can create interactive and personalized learning environments. Platforms like WordPress, along with integration and customization tools, provide a suitable environment for educational blogging.

Blogs - what they are

A blog (web log = Internet log) is a web publication that contains regular and / or constantly updated articles that are usually written expressing the writer's personal opinions.

As a rule, updating a blog consists of adding new text, like a journal, all contributions being displayed in reverse chronological order (the newest ones appear immediately, above, in plain sight).

These types of web publications are basically accessible to the general public, but some may require payment of a subscription.

The term "blog" appeared in 1997, when John Berger called his own site "weblog".

Blog elements

- posts (appear in reverse chronological order, usually in the central area of the page, the side areas being reserved for other information);
- each post presents the date of creation / modification, has a title, a fixed address (URL) called permalink; the permalink will be used when referring to the post on the same blog or the others who comment on it;
- a post may contain text, images, audio / video files, links to other resources / blogs; citation of sources is mandatory;
- each post can receive comments from visitors (authenticated or not); a successful blog has a large number of comments, facilitated by the author / authors of the blog;
- most blogging platforms allow trackback - a notification sent by a referenced/commented blog; often the backtrack mechanism is invalid or moderated, in order to avoid spam;
- posts can be organized into categories, which usually appear listed on the side; a post can be included by the author in one or more categories;
- each post can have keywords associated to it as tags, in order for visitors to easily find articles on a specific interest;
- each blog post has the possibility of being shared on social media platforms;
- usually the blog page also contains a calendar, which offers the possibility to browse posts published in a certain day / month / year;
- the blogroll contains links to blogs which the author of the blog follows and promotes to visitors;
- the blog's RSS is visible;
- an image, name, profile of the author of the blog is recommended to be published;
- searching for specific terms in the blog is usually possible;
- the link to the hosting platform appears most often;
- a series of widgets can be integrated in the blog, as specific blog tools: links to directories where the blog is listed, the logos of other promoted websites / blogs, chatting with visitors; social media connections.

Blogging Platforms

Name	Link	Logo
Wordpress	https://wordpress.org/ or https://wordpress.com/	
Blogger	https://www.blogger.com/	
Wix	https://www.wix.com/	

Tumblr	https://www.tumblr.com/	
Medium	https://medium.com/	
Squarespace	https://www.squarespace.com/	
Ghost	https://ghost.org/	

WordPress Tutorials

Official tutorials from Wordpress: https://wordpress.org/support/

6. **Collaboration *Moodle choice, Wiki***

Moodle Choice is an assessment question type available in the Moodle learning management system (LMS). This question type allows teachers to create multiple choice questions where students can select one or more correct options.

How to create a „choice" resource

Video tutorial for creating a choice resource:

How to create a Choice activity

Follow the steps below to add a "choice" resource to your course. This resource is useful for teachers to allow students, for example, to choose a project topic from several options.

Open the list of activities and resources that can be added to a course and choose 'Choice'.

Fill in the name and description of the activity.

Fill in the desired options.

Check other settings (possibility that any student can see the choices made by others, etc.).

Save the activity

Introduction to Wikis

What Is a Wiki?

A wiki is a collaborative tool that allows people to contribute and modify one or more pages of course related materials. Wikis are collaborative in nature and facilitate community-building within a course. Essentially, a wiki is a web page with an open-editing system.

Why use a wiki?

One of the primary reasons to use wikis is because they help people reach Bloom's higher order skills – things like creating and evaluating. Additionally, wikis achieve many of Chickering and Ehrmann good teaching practices including cooperation between people, active learning, prompt feedback from peers, time on task, the articulation of high expectations, and support for diverse talents.

Practically, we also think that wikis are a good tool to use because access and editing can be controlled by the instructor thus making a wiki public or private. Additionally, wikis are accessible online and include user friendly features that require little training.

Bibliography and further reading:

https://cft.vanderbilt.edu/guides-sub-pages/wikis/

Wiki allows collaborative content creation and is the most commonly used tool for this purpose. It has a strong didactic character, relying on the knowledge of all users to provide complete, clear and accurate information.

By filling in previous users, a student demonstrates their understanding of the material by adding, deleting or modifying information. The end result represents the work of a group, with the teacher also being able to track all the intermediate versions of the wiki, and therefore the contribution of each individual student.

7. Graphics *(GIMP) Openshot*

GIMP is one of the most popular free photo editing programs, but the many options and menus are an impediment to its adoption by less experienced users.

The name GIMP is short for GNU Image Manipulation Program, and this application is one of the best alternatives to the classic Adobe Photoshop, which in addition to the very high costs has many features that will almost never be used by most users.

Therefore, in this article we will acquaint you with the GIMP interface and its main functions, in order to give you the necessary impetus to use this program. Later, as you gain experience, you will see that GIMP is an effective tool for editing your photos.

GIMP's interface seems very complicated at first, the application has taken over the Photoshop model and offers in the home screen a so-called Toolbox, which includes many icons in the upper half. For each option there is also a set of settings that can be edited in the bottom half, which further crowds the workspace. In addition, when we open the application we are greeted by another workspace for layers.

However, using the basic functions of this photo editor is simple, and below we will show you how to use the most common tools in such software.

Few examples with operations possible to do in GIMP:

- Image size reduction in Mb - one of the most common operations for an editing program is to reduce the size of an image in MB, especially when you want to publish it on the Internet. After the opening of photo you need to select File - Export. Then click on Select file type at the bottom, then choose the JPG format and press Export. In the window that appears you have to determine at what quality you save the picture. The photo I tested for this article had 1.8 MP, and after reducing the quality to 50% it reached only 0.8 MP and 0.5 MB for a quality of only 20%.
- Image size reduction considering the number of pixels n other situations you will have a large photo as the number of pixels you want to reduce to more "normal" sizes. To do this, just right-click on the picture opened in GIMP and select the Image - Scale Image menu. In our example, we used photo of 3000 × 2000 pixels that we reduced to a width of 1000 pixels, large enough to be published on the Internet. It is worth noting that when saving the image according to the procedure from the previous step, the picture reached only 149 KB, after the initial photo was 750 KB. This is, in fact, another (more efficient) way to reduce the MB size of a photo.
- Crop an image - another common requirement is to crop a part of the picture that for various reasons does not fit the context. The Crop function is available through the Tools - Transform Tools - Crop sequence, and then drag-and-drop selected the area I wanted to keep.
- Image rotation - the solution is also as simple as possible: select Tools - Transform Tools - Rotate and in the menu that appears select how many degrees you want to rotate the photo.

8. **Presentation *(prezi)***

Prezi is a web-based tool for creating presentations (called prezis for short). It is similar to other presentation software like Microsoft PowerPoint, but it offers some unique features that makes it a good alternative. In recent years, it has become popular in schools and businesses.

Download Prezi guide
https://unicampus.ro/cursuri/pluginfile.php/2919/mod_book/chapter/743/Prezi%20guide.pdf

https://prezi.com/education/?click_source=logged_element&page_location=header&element_text=education

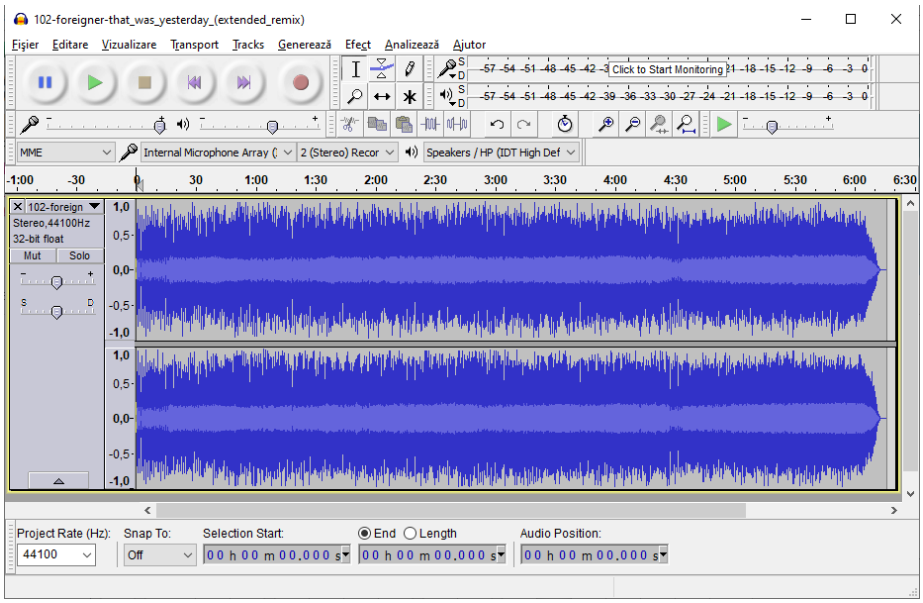
https://www.youtube.com/playlist?list=PL8ciRIuEbGNa6u9bHP9IlLCXRRKS0Y1Fk

9. **Audio *(Audacity)***

Audacity is a popular audio editor with a large set of functions. The software is capable of recording sound directly from microphone, USB or Firewire devices that support recordings and multiple channels to control the required volume levels. Audacity allows you to eliminate background noise, muffle coughs or sighs, equalize your overall sound level and get rid of other recording defects in broadcast or audio sound devices. The software has a large set of tools to edit and combine sound files. Audacity also allows you to connect various add-ons to enhance your work with audio files.

Main features:

- Record sound from various sources
- Combine audio files
- Multichannel recording
- Simultaneous processing of several files
- Removal of noise defects
- Digitizes analog recordings

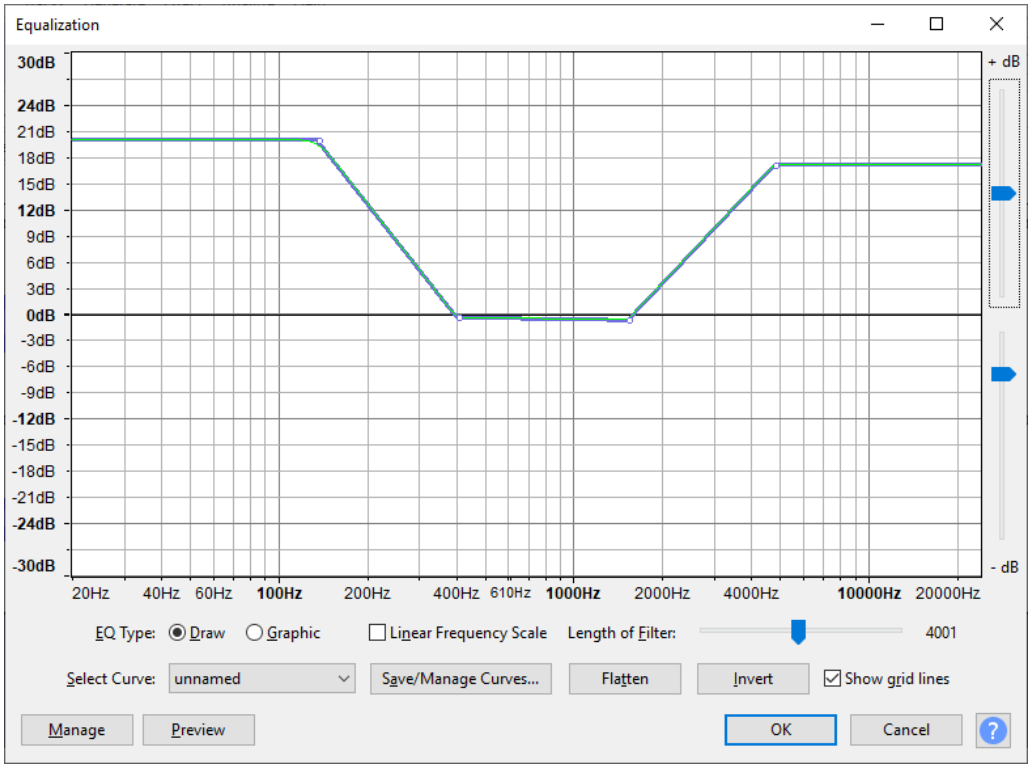


Audio processing

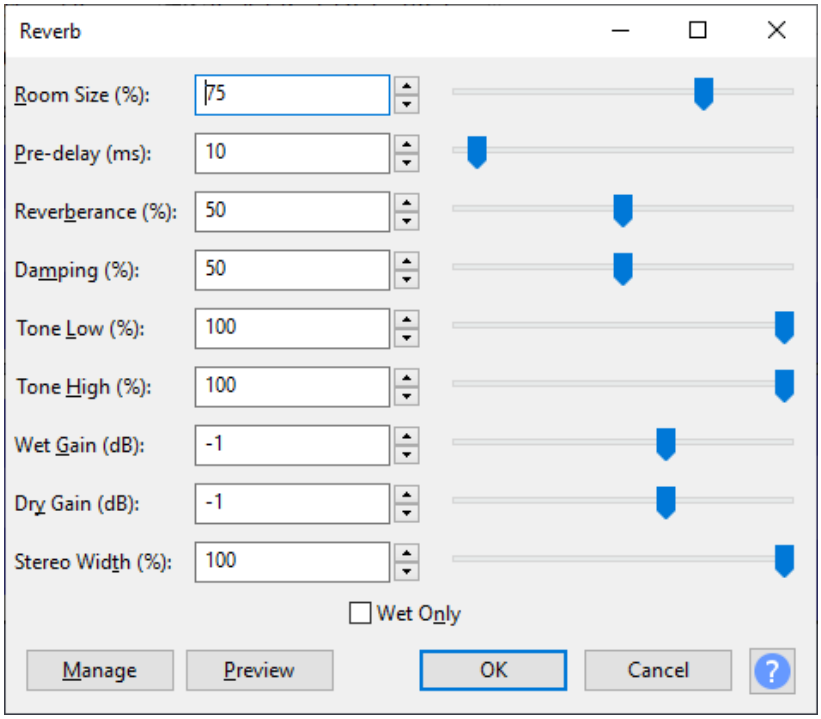
Audacity provides a generous amount of audio processing effects, such as: reverb, equalisation, chorus, filters, pitch control, etc.

For each of these there are a large number of settings available that allow a very fine configuration of processing.

Equalization



Reverb

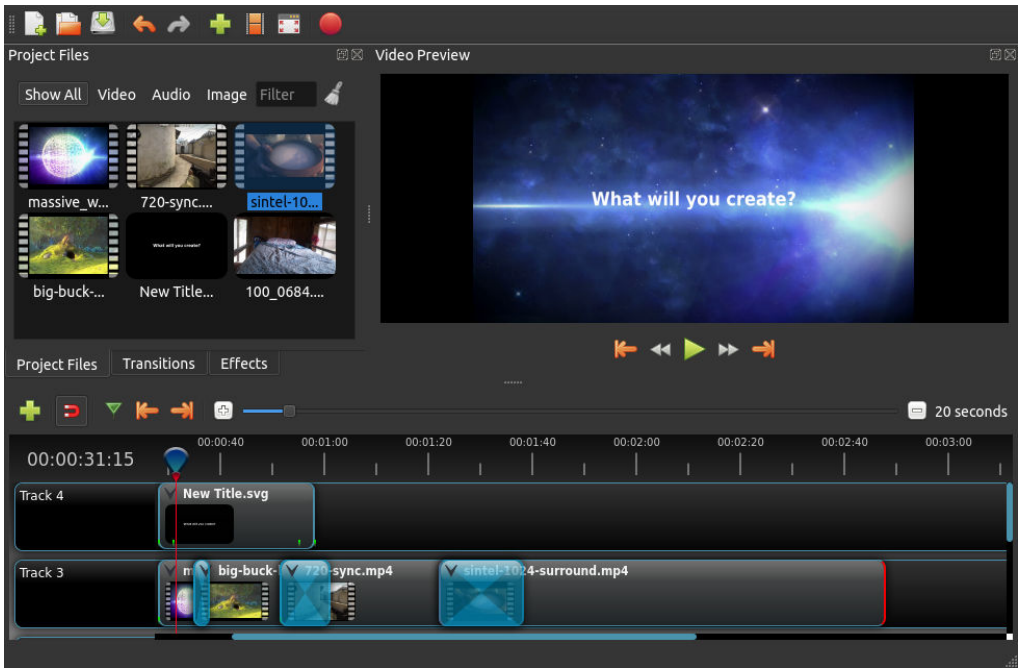


At the end of processing, the finished material can be saved in various formats of uncompressed audio files or compressed in various formats with or without loss.

10. Video *(Openshot/OBS)*

Openshot Video Editor

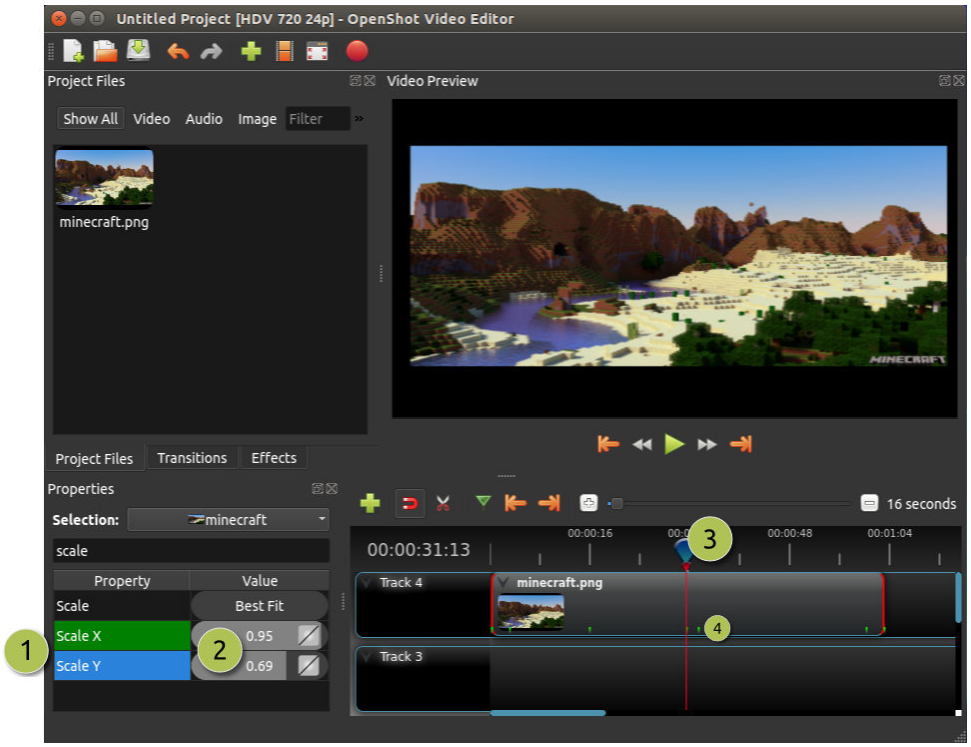
Openshot is entirely open source, which makes it one of the best video editing software that is accessible. This free editor strikes a nice balance between advanced features and a simple interface with its easy to use drag and drop features. It also allows real-time previews when you create transitions between clips. Openshot's features include: Unlimited tracks/layers Clip resizing, scaling, trimming, snapping, rotation, and cutting video transitions with real-time previews Compositing, image overlays, watermarks Title templates, title creation, subtitles 3D animated titles (and effects) Advanced Timeline (including drag & drop, scrolling, panning, zooming, and snapping)



Cross-platform video editing software (Linux, Mac, and Windows), OpenShot supports the following operating systems: Linux (most distributions are supported), Windows (version 7, 8, and 10+), and OS X (version 10.15+). Project files are also cross-platform, meaning you can save a video project in one OS, and open it on another. All video editing software features are available on all platforms.

Powerful curve-based Key frame animations framework capable of an unlimited number of key frames and animation possibilities. Key frames interpolation mode can be quadratic bezier curves, linear, or constant, which determines how the animated values are calculated.

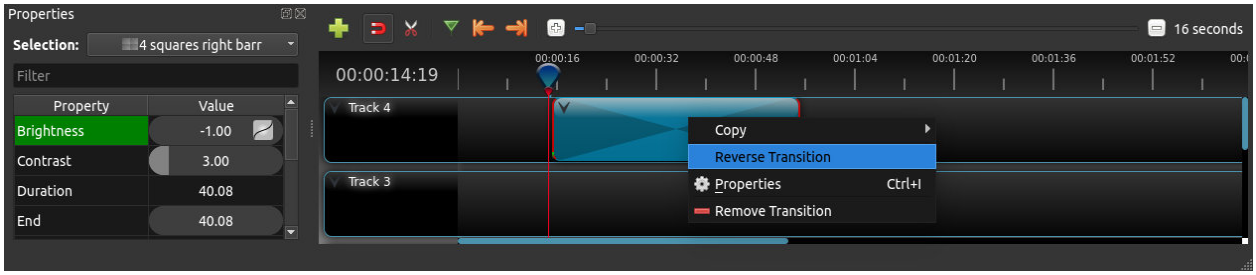
Desktop integration (drag and drop support) is a key feature, native file browsers, window borders, and full drag and drop support with the native file system.



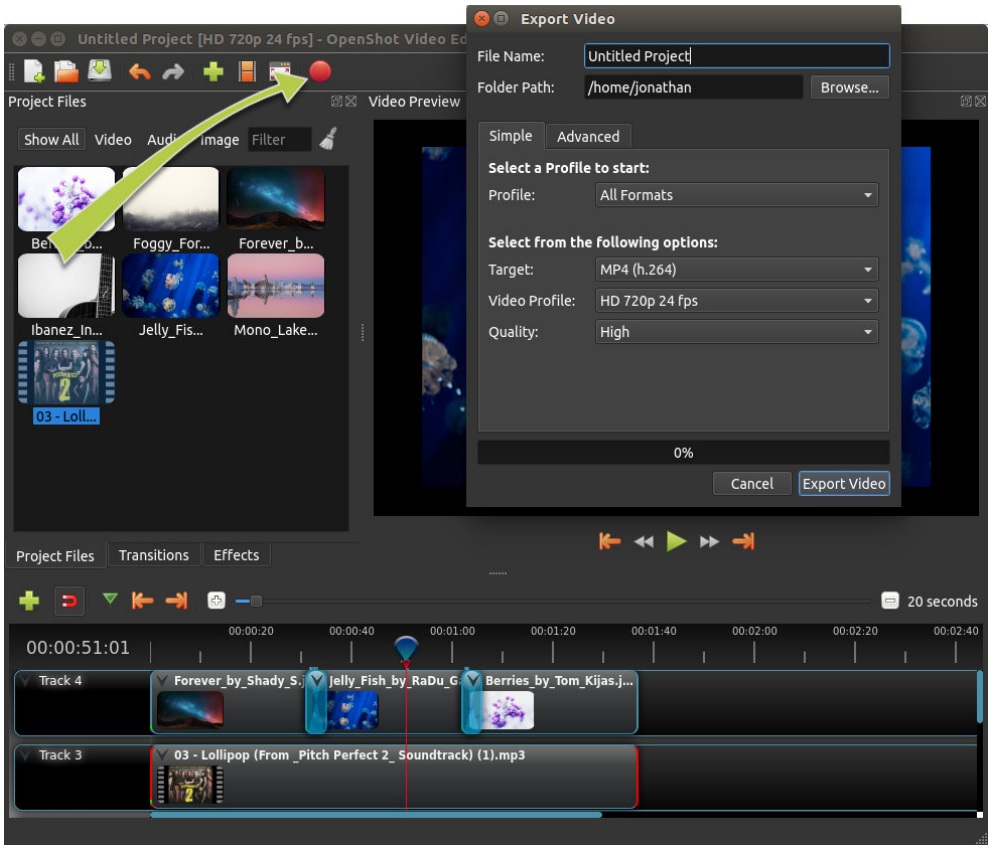
Unlimited tracks / layers are used to layer images, videos, and audio in a project. Can be created as many layers as needed, such as watermarks, background audio tracks, background videos, etc... Any transparency will show through the layer below it. Tracks can also be moved up, down, or locked.

Clips on the timeline can be adjusted in many ways, including resizing, scaling, trimming, rotation, alpha, snapping, and adjusting X,Y location. These properties can also be animated over time with just a few clicks! You can also use our transform tool to interactively resize clips.

Over 400 video transitions are included in OpenShot with real-time previews, which lets you gradually fade from one clip to another. The quickness and sharpness of the transitions can also be adjusted using keyframes (if needed). Overlapping two clips will create a new transition automatically.



Based on the powerful FFmpeg library, OpenShot can read and write most video and image formats. For a full list of supported formats, see the FFmpeg project. OpenShot's export dialog defaults to some of the more common formats, but with the advanced tab, you can use any FFmpeg format.



Over 40 vector title templates are included with OpenShot, which makes adding titles to your project fun and easy. You can also create your own SVG vector titles, and use those as templates instead. Quickly adjust the font, color, and text of your titles in our built-in title editor.

Render amazing 3D animations inside OpenShot, powered by the wonderful, open-source Blender application. OpenShot comes with more than 20 animations, and lets you adjust colors, sizes, length, text, and many render properties (such as reflectivity, bevel, extrude, and more).

Advanced video editing timeline: dragging and dropping, resizing clips, zooming in and out, alignment, preset animations and settings, slicing, snapping, and more.

Frame accuracy - step through each frame of video allows OpenShot to finely adjust which frames are shown.

Time-mapping and speed changes on clips like slow/fast, forward/backward, reverse the direction of a video, or manually animate the speed and direction of your clip as you wish, using our powerful key frame animation system.

Audio mixing and editing features built-in, such as displaying waveforms on the timeline, or even rendering the waveform as part of video. You can also split the audio from your video clip, and adjust each audio channel individually.

Digital video effects, including brightness, gamma, hue, greyscale, chroma key (bluescreen / greenscreen) , and many more!

11. **Playback *(VLC media player)***

VLC, short for **VideoLAN Client**, is a powerful, open-source multimedia player developed by the VideoLAN project. Known for its versatility and wide format support, VLC is capable of playing nearly all video and audio files, streaming media over networks, and even converting between formats. With its cross-platform compatibility, VLC is a go-to tool for both casual users and professionals, offering features like subtitle synchronisation, video editing, and screen recording. Whether you need a reliable player for various media types or a tool for creating and streaming content, VLC provides a comprehensive solution that is free to use and highly customizable.

How VLC Can Be Useful for Professors

VLC supports almost all video and audio formats without the need for additional codecs. This makes it a versatile tool for professors who might have learning materials in different formats, ensuring they can play videos, lectures, or any multimedia content without compatibility issues.

It allows users to adjust playback speed, which is useful for reviewing content at a faster pace or slowing it down for detailed analysis. This can be particularly beneficial when preparing materials where timing is important, such as language lessons or technical demonstrations.

VLC can be used to record a screen, which is helpful for creating tutorials or capturing lecture presentations. Professors can use this feature to create video content for their students, such as demonstrating software usage or explaining complex concepts with on-screen annotations. It can also stream live content over the internet or a local network. Professors can use this feature to broadcast lectures or class sessions in real time, allowing remote students to participate. This can also be useful for hosting virtual office hours or Q&A sessions.
While VLC is not a full-fledged video editor, it does offer basic editing capabilities such as cutting video clips, applying simple filters, or converting video formats. This can be handy for professors who need to quickly edit or tailor video content for their classes.

The player supports subtitles and closed captions, making it easier for professors to create accessible learning materials. They can add, edit, or synchronise subtitles to video content, which is particularly important for students with hearing impairments or those who benefit from visual text aids.

VLC's ability to stream and support various media formats can be integrated with LMS platforms, allowing professors to incorporate multimedia content directly into their course materials. This enhances the overall learning experience by providing diverse and dynamic resources.

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

12. **Evaluation Kahoot**

Kahoot is a free learning tool, although it has some paid plans, based on recreational activities, such as quizzes, true or false questions. Through this platform it is possible to create and organise games in real

time and share them with remote players. The answers are made through the user's device, it is only necessary to know the pin (number) of the game.

The tool is very intuitive and simple. Either regarding the creation of a Kahoot or the participation in an activity. However, it is favourable that there is an explanation, on the part of the organiser, to clarify the participants about the rules of the game.

Kahoot enhances the use of gamification in the classroom by facilitating the use of game elements such as immediate feedback, clear rules, fun, inclusion of error, pleasure and motivation. Furthermore, Kahoot can also be used as a diagnostic, formative or summative assessment tool, depending on the objectives to be achieved. Game-based learning is considered a good practice in education. This has proven to be an effective tool for teachers to use in the classroom because it engages students in problem solving, critical thinking, and content knowledge review. Kahoot, as a digital game resource, offers teachers the opportunity to create quizzes, surveys and discussions that engage students in learning with a competitive game format.

There are several explanatory videos, developed by Kahoot and published on Youtube, such as:

- creating a Kahoot (https://www.youtube.com/watch?v=aOFO8wE4bW4);
- use of Kahoot through team mode (https://www.youtube.com/watch?v=XGIRbJrqLcw);
- use of Kahoot application (https://www.youtube.com/watch?v=4JC8h4Id_5k)

https://www.youtube.com/embed/4JC8h4Id_5k

13. Media Kaltura

Kaltura Video Cloud Platform for Education is a single platform purposefully built to power real-time, live and VOD experiences for online programs and virtual learning. The Kaltura Video Platform for Education includes a range of products for virtual classrooms, lecture capture, webinars & live events, and student outreach — all designed to create engaging, personalised, and accessible experiences on campus and beyond. For more than a decade, Kaltura has been the leading video platform for educational institutions, serving hundreds of schools worldwide, including 15 of the top 20 US universities. Kaltura's open standard platform allows students and staff to create and manage video that can be used in any platform for any purpose across campus.

Main features:

- Persistent and branded rooms
- Live quizzes and polls
- Content library and playlists

- Breakout rooms
- Seamless video playback
- SSO-based user permissions management
- Live captioning
- Screen sharing
- Digital whiteboard
- Full moderator and chat controls
- Simulive
- Feature-packed live-to-VOD conversion
- Performance analytics
- Session recording

Kaltura platform supports professional Engagement involved in the activities of educators and students by bringing together the best online and hybrid classroom features in a single workspace. Kaltura provides solutions for a customised, user-friendly, and integrated learning experience.

Kaltura platform contains brandable persistent classrooms and breakout rooms that instructors can prepare in advance and save. Everyone can join the virtual classroom with a single click, no download or installation is required. Kaltura also provides engagement features: collaborative whiteboards, screen sharing, real-time note taking, polls, and quizzes, and also collaboration and communication with full chat capabilities, moderation controls, student permission management, and a door lock feature. Kaltura platform has also live chat, email, and Academy support channels that the educators/instructors can safely use with students. The instructor or educator can easily monitor and assess student performance with session analytics, attention indicators, and attendance information. Kaltura can be easily integrated into the Learning Management System or can be used as a standalone platform. It also offers flexibility with session recordings, automatic transcription, and a complete video editing suite with interactive features.

https://www.youtube.com/embed/CNRavTdSN5E

Engage your learners *(ideas for teaching)*

Engaging learners with open tools requires an approach that promotes interactivity, personalization, and collaboration while leveraging the flexibility and accessibility of these tools. Here are some key strategies:

1. **Incorporate Open Educational Resources (OER):** Use platforms like OER Commons, which provide free learning materials, to diversify learning content and cater to different learning styles. Learners can interact with textbooks, videos, and lesson plans, all of which can be adapted or remixed to fit specific needs. This customization allows educators to align content with the learners' interests and levels(

Open Source Alternatives
).

Engage your learners:

Including a video into text

2. **Encourage Collaboration through Open-Source Platforms:** Use collaborative platforms like Moodle (open-source learning management systems) where learners can engage in discussions, group projects, or peer reviews. These platforms enable real-time collaboration and communication, fostering a sense of community and teamwork among learners. https://opensource.org/ provides models for these platforms

3. **Promote Active Learning with Interactive Tools:** Open tools such as H5P offer the ability to create interactive content like quizzes, games, and simulations, which actively involve learners in the learning process. These tools make the learning experience more engaging by allowing learners to test their knowledge and receive instant feedback(
Open Source Alternatives

Singleton, R., & Charlton, A. (2020). Creating H5P content for active learning. Pacific Journal of Technology Enhanced Learning, 2(1), 13-14. https://ojs.aut.ac.nz/pjtel/article/view/32

4. **Utilize Open Data and Research Tools:** Encourage learners to explore open datasets and research tools available through platforms like Google Scholar or GitHub. Engaging with these resources can deepen critical thinking and problem-solving skills, particularly in data-driven or research-based learning contexts.

5. **Facilitate Project-Based Learning or Challenge-Based-Learning with Open Software:** Allow learners to work on projects using open-source software like GIMP for graphic design, Audacity for audio editing, or Jupyter Notebooks for coding. These tools help develop practical skills and enable learners to work on real-world applications, enhancing engagement and motivation.

Changemakers as digital makers: Connecting and co-creating

E Whewell, H Caldwell, M Frydenberg, D Andone - Education and Information Technologies, 2022

6. **Foster Autonomy and Personalization, Open Learning:** Open tools, can be used to allow learners to engage with digital learning resources independently, which supports self-directed learning and deeper comprehension.This can also be done by creating, using and integrating in your courses

Massive Open Online Courses (MOOCs) and several methods on how this can be done are available and several experiences describing it.

Integrating MOOCs in traditional higher education - D Andone, V Mihaescu, A Ternauciuc, R Vasiu
https://www.academia.edu/download/37666738/Papers.pdf#page=71

Open online course Introduction to MOOC design and delivery" on iversity
https://iversity.org/en/courses/introduction-to-mooc-design-and-delivery?r=949eb

By integrating open tools thoughtfully, educators can create dynamic, inclusive, and engaging learning environments that empower learners to take ownership of their education.

Course check

Open Digital Tools for teaching creation: Check your understanding

H5P (HTML5 Package) is an open-source framework for creating interactive content for the web. It is widely used in education to create engaging and effective learning materials. H5P is a great option for educators who want to create interactive and engaging learning materials. It is a versatile tool that can be used to create content for different learning levels and subjects.

Q1. H5P is:

A. **an open-source framework for creating interactive content for the web**
B. **a versatile tool that can be used to create engaging content for different levels and subjects**
C. A type of open-source software for replacing Microsoft Office
D. An audio-video editor for offline use

Q2. What are the main characteristics of a blog?

A. **a post may contain text, images, audio / video files, links to other resources / blogs**
B. **usually blog posts offer the possibility of being shared on social media platforms;**
C. **each post can receive comments from visitors (authenticated or not); a successful blog has a large number of comments, facilitated by the author / authors of the blog;**
D. it offers a private space for creating restricted content, unavailable to the public;

Q3. Which of the following advice should be followed by teachers in order to motivate learners?

A. **incorporate OERs and open-source content**
B. **promote active learning through interactive tools**
C. use uniformity in content and learning path in order to foster resilience
D. include subscription-based content for motivating your learners

Feedback

Module evaluation survey