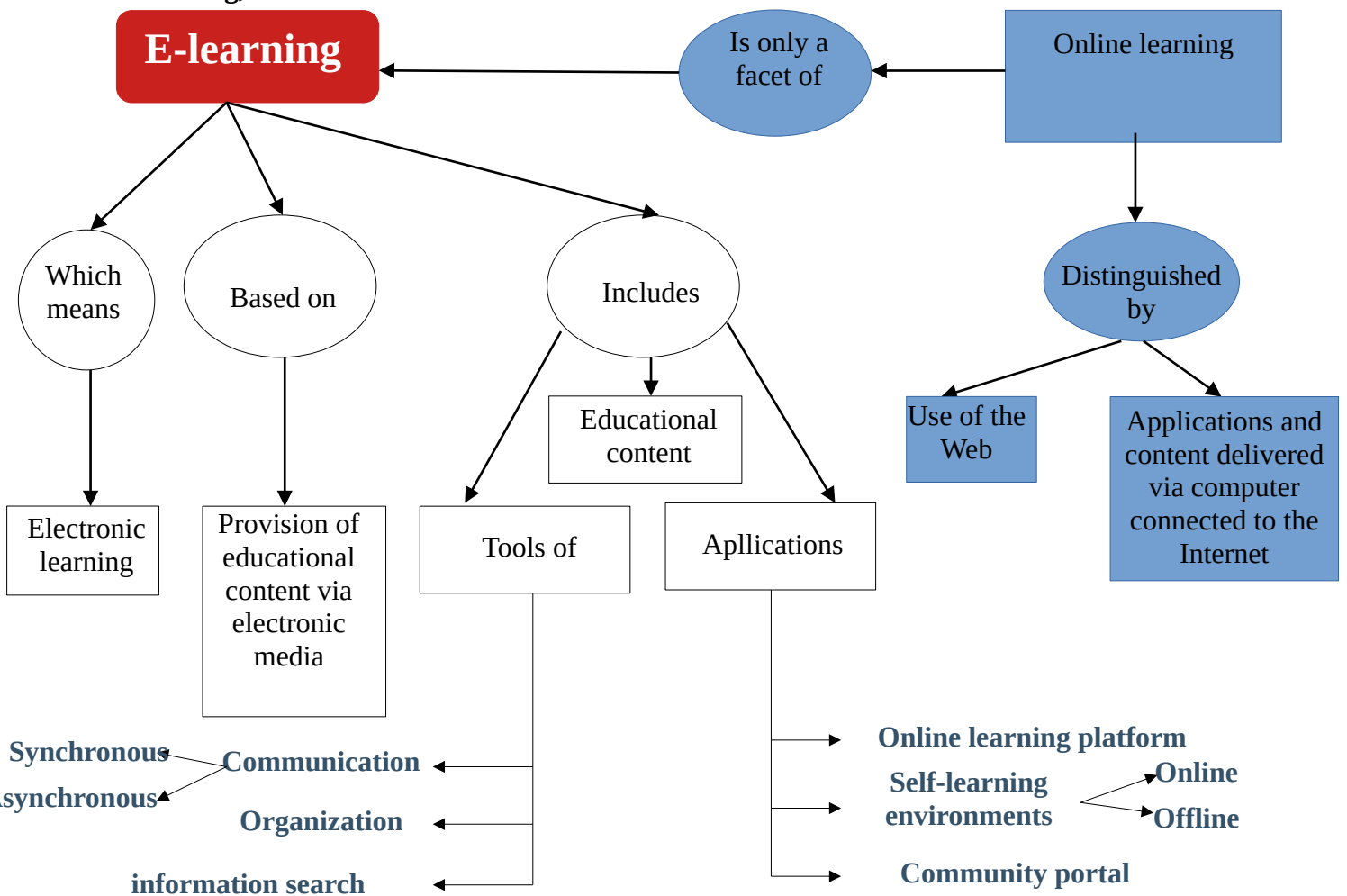


# Chapter 02: E-learning tools and platforms

## 1. What is e-learning?

- e-learning is an educational method that uses electronic and computer resources;
- it allows you to learn without the presence of the teacher;
- it often requires the presence of a tutor;
- it is characterized by personal investment and strong learner interactivity.

E-learning, en d'autres termes



## 2. Amalgamation of concepts

### Important concepts

➔ ***Technologies***

- ICT, ICTE, CMS, e-learning platform, LMS, MOOC, Virtual Campus

➔ **Tools (communication, collaboration, production)**

- Editorial channel, Collective work devices/Videoconferencing, Office software

➔ ***Learning modes***

- E-formation,
- Blended learning
- Virtual classroom
- Enriched face-to-face
- ...

➔ ***Teaching/learning models***

- Transmission of knowledge
- Construction of knowledge

## 2.1. Technologies

### 2.1.1. ICT

Information and communication technologies which encompass all electronic and computer tools allowing communication, collaboration, sharing and dissemination of information. The Internet is the best example.

### 2.1.2. ICTE

ICT adapted to education, includes all tools dedicated to online training and learning.

### 2.1.3. Online learning

Online learning has existed for a long time with correspondence courses. It is a training system designed to allow individuals to train without traveling to the training location and without the physical presence of a trainer.

### 2.1.4. CMS

A content management system (CMS) is an application used to manage content, allowing multiple contributors to create, edit and publish content. The content of a CMS is usually stored in a database and displayed in a presentation layer based on a set of templates like a website.



Figure 1: The different components of a CMS

### 2.1.5. E-learning platform, LMS

**LMS:** Learning Management System.

Software environment installed on a remote server allowing you to manage all functions related to the organization of a distance learning course.

**Moodle** is one of the most used LMS in the world of education, and it is also the system used for online learning in Algerian universities (Sétif 02 University uses Moodle as a learning platform). online learning).

#### → What is Moodle?

Moodle is a free and open source learning management system (LMS) used in higher education for over 15 years. You can install it on any operating system to allow teachers to create their own courses and assignments, and learners to follow and join these courses.

#### → Présentation et historique de Moodle

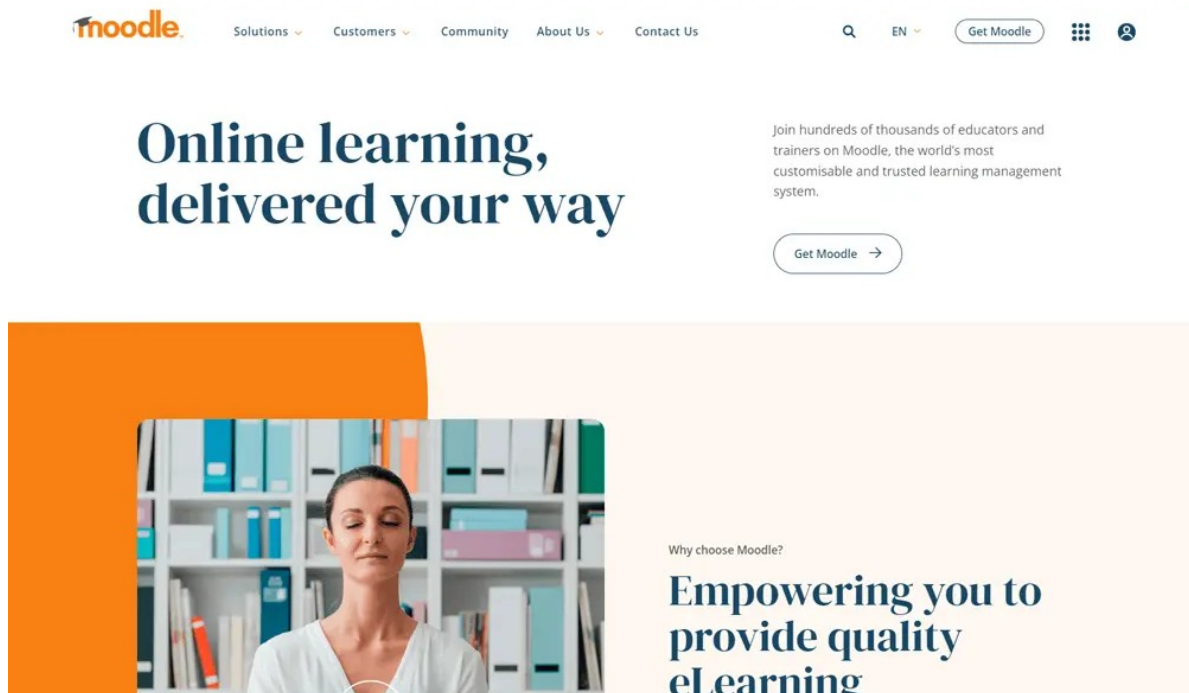


Figure 2: Moodle Website

**Moodle is a role-based system.** A role is a set of system-wide permissions that can be assigned to specific users in specific contexts. The combination of roles and context defines the ability of a specific user to do something on any page. The most common examples are **student**, **teacher**, and **administrator** roles.

### → Benefits of Moodle for Educators

**Sharing learning materials** – With a Moodle platform’s rich resource toolkit, files and links to websites can be shared with learners easily. Pages of learning content – combining text, images and embedded video - can also be quickly created within a course.

**Managing access to learning materials** – Group students into year or class groups to automatically provide access to the appropriate learning materials. You can even control when specific course content becomes available to learners.

**Updating course content** – Edit 24/7 via a browser to update and add to course content for learners to access immediately.

**Automated assessment** – Why spend time marking when Moodle can do it for you?! Use a variety of engaging question types in a Quiz to assess the learning. Moodle can mark these and give immediate detailed feedback to the learners – ideal for both formative and summative assessment.

**Managing work submissions** – Learners can submit work and receive feedback and grades from the teacher. Teachers can also mark offline and can also incorporate their mark scheme to promote a consistent approach to marking. Teachers can also construct a comment bank to help supplement personalised feedback with pre-defined statements.

**Communicating with learners** – Moodle’s messaging system allows learners and teachers to communicate easily. Teachers can also communicate with groups of learners via course forums either to provide answers to learners’ questions or to just get involved in discussions.

**Monitoring progress / Reports** – No more need for tracking sheets in Excel! Moodle’s stores each learner’s scores from any graded activities. Snapshot reports can be viewed at any time to see how each learner is progressing through the course materials. There is also a full audit trail to monitor when and how regularly your learners are accessing resources.

### → Benefits of Moodle for learners

**Ease of use** – it’s a great place for your learners, whatever their age, to become confident in using the web within a school-controlled environment.

**Engaging content** –with a variety of resource and activity types, Moodle learning can be fun! Moodle supports a range of media to present or link to learning materials, support the learners and to assess their learning.

**Communicating and collaborating with peers** – Create a dynamic virtual learning environment (VLE) using the course forums so that learners can discuss topics, share ideas and even feedback on each other’s work. The chat module in Moodle allows a scheduled online messaging interaction – ideal for guest speakers or “live” discussion accessed from different locations at the same time.

**Dashboard** – Learners can customise their own homepage within the site to tailor information and links to their individual needs.

**Testing themselves** – the Quiz activity can give immediate feedback to the learners related to their answers so learners can regularly test themselves building their knowledge and confidence throughout their learning journey.

→ **Elements that can be included in a Moodle course space:**

When the learner joins a Moodle course space (see Chapter 01, Section 2.3 to find out how to join a Moodle course space), they can see several elements constituting the course, including:

- **Sections du cours**

Courses can be divided into sections to organize resources and activities for students. Each section can have a description and can contain many activities and resources as the teacher desires. Generally and not necessarily, a course section is the equivalent of a course chapter.

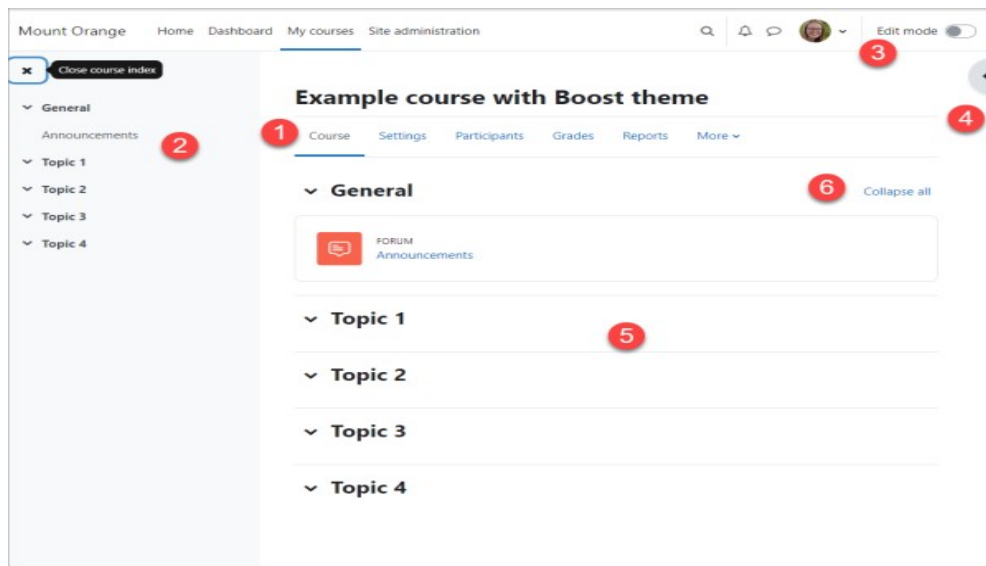


Figure 3: Example of course sections

→ **Activities**

An activity is a general name for a group of features in a Moodle course. Usually an activity is something that a student will do that interacts with other students and or the teacher.

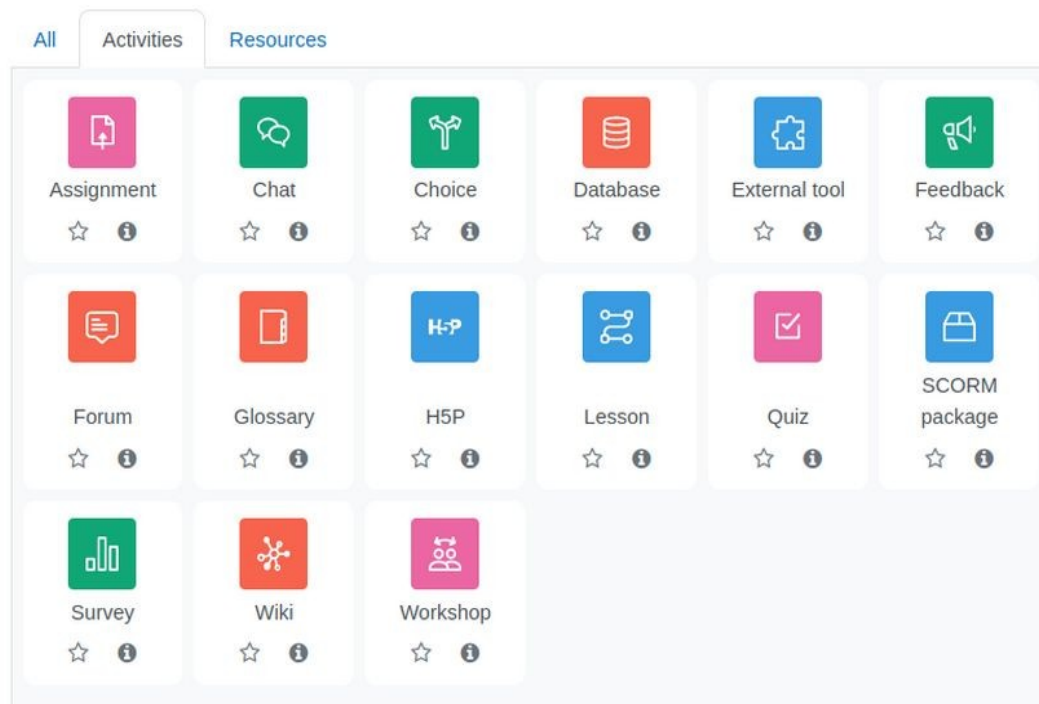


Figure 4: Moodle activities

In Moodle terminology, an Activity, such as Forums or Quizzes, properly means something students can contribute to directly, and is often contrasted to a Resource such as a File or Page, which is presented by the teacher to them. However, the term activity is sometimes for convenience also used to refer to both Activities and Resources as a group.

There are 15 different types of activities in the standard Moodle that can be found when the editing is turned on and the link 'Add an activity or resource' is clicked.

**Assignments** - Enable teachers to grade and give comments on uploaded files and assignments created on and off line



**Quiz** - Allows the teacher to design and set quiz tests, which may be automatically marked and feedback and/or to correct answers shown



**BigBlueButton** - Run live video conferencing sessions within Moodle

**Chat** - Allows participants to have a real-time synchronous discussion

**Choice** - A teacher asks a question and specifies a choice of multiple responses

**Database** - Enables participants to create, maintain and search a bank of record entries

**Feedback** - For creating and conducting surveys to collect feedback.

**Forum** - Allows participants to have asynchronous discussions

**Glossary** - Enables participants to create and maintain a list of definitions, like a dictionary

**H5P activity** - Enables H5P content created in the Content bank or on h5p.com or with the lumi App to be easily added to a course as an activity.

**Lesson** - For delivering content in flexible ways

**(LTI) External tool** - Allows participants to interact with LTI compliant learning resources and activities on other web sites. (These must first be set up by an administrator on the site before being available in individual courses.)

**SCORM** - Enables SCORM packages to be included as course content

**Survey** - For gathering data from students to help teachers learn about their class and reflect on their own teaching

**Wiki** - A collection of web pages that anyone can add to or edit

**Workshop** - Enables peer assessment



Additional activities from the Moodle plugins directory may also be installed and used in the Moodle site.

## → Resources

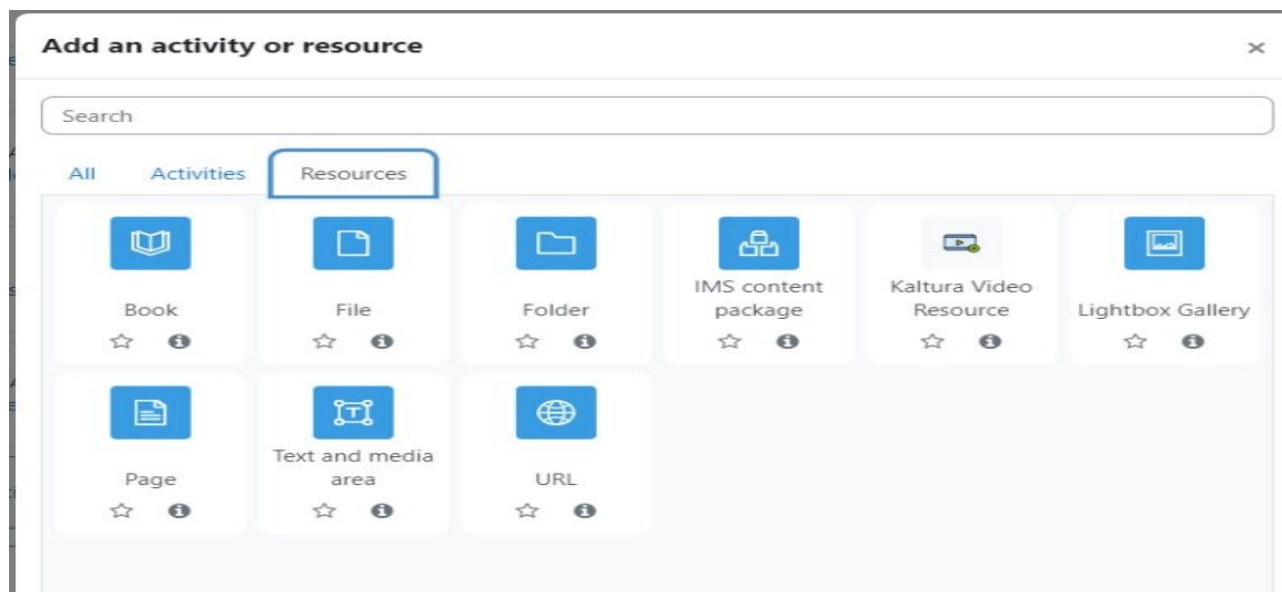


Figure 5: Moodle resources

A resource is an item that a teacher can use to support learning, such as a file or link. Moodle supports a range of resource types which teachers can add to their courses. In edit mode, a teacher can add resources via the 'Add an activity or resource' link. Resources appear as a single link with an icon in front of it that represents the type of resource.

**Book** - Multi-page resources with a book-like format. Teachers can export their Books as IMS CP (admin must allow teacher role to export IMS)

**File** - A picture, a pdf document, a spreadsheet, a sound file, a video file

**Folder** - For helping organize files and one folder may contain other folders

**IMS content package** - Add static material from other sources in the standard IMS content package format

**Page** - The student sees a single, scrollable screen that a teacher creates with the robust HTML editor

**Text and media area** - Can be a few displayed words or an image used to separate resources and activities in a topic section, or can be a lengthy description or instructions

**URL** - You can send the student to any place they can reach on their web browser, for example Wikipedia.

### 2.1.6. MOOC

A massive open online course (MOOC) or an open online course is an online course aimed at unlimited participation and open access via the Web. In addition to traditional course materials, such as filmed lectures, readings, and problem sets, many MOOCs provide interactive courses with user forums or social media discussions to support community interactions among students, professors, and teaching assistants (TAs), as well as immediate feedback to quick quizzes and assignments.

Udemy, Edx, Coursera, LinkedIn Learning, Moodle academy, Udacity, Fun MOOC and OpenClassrooms are all examples of platforms or websites that offer MOOC-type training.

The screenshot displays the Udacity website interface. At the top, the Udacity logo is on the left, and navigation links for 'Catalog', 'Explore', 'Nanodegree', 'For Business', 'Blog', and 'My Classroom' are on the right. Below the navigation is a search bar and the heading 'Courses and Nanodegree Programs'. On the left side, there are several filter categories: 'SKILL LEVEL' with options for Beginner (checked), Intermediate, and Advanced; 'ESTIMATED DURATION' with options for <1 month (checked), 1 - 3 months, and 3+ months; 'TYPE' with options for Nanodegree and Free Courses; and 'CATEGORY' with options for All (selected), Android, Artificial Intelligence, and Data Analytics. The main content area shows a grid of course cards. The first card is 'AI Programming with Python' (marked 'NEW'), a Beginner-level course about learning Python, NumPy, Pandas, Matplotlib, PyTorch, and Linear Algebra for neural networks. The second card is 'Creating an Analytical Dataset', a Beginner-level course about preparing data for analysis, in collaboration with Alteryx. The third card is 'SQL for Data Analysis' (marked 'NEW'), a Beginner-level course about using SQL to extract and analyze data, in collaboration with Mode. The fourth card is 'Writing READMEs', a Beginner-level course about writing documentation using Markdown.

Figure 6: Udacity : a platform dedicated to MOOC training

#### → Differences between Moodle and MOOC

Both Moodle and MOOCs offer online learning but have distinct differences. Let's explore some of them in more detail:

- **Accessibility - Moodle is open-source** software, which means anyone can access and use it freely. It is also **available on various platforms**, including desktop and mobile devices. **MOOCs** are generally available online and are often free of charge. They are usually hosted by a variety of institutions, including universities, and are typically open to anyone interested in taking them.

- **Content - Moodle is a powerful course management system** that allows instructors to create and manage their courses. It includes features like forums, quizzes, assignments, and grading tools. **MOOCs are typically made up of videos, tutorials, and activities** and are often organized into modules or weeks. They are often peer-reviewed and include assessments and feedback.
- **Delivery** - Moodle is a web-based platform and can be accessed through a web browser. MOOCs are usually delivered through various online platforms, including **YouTube, Udemy, and Coursera**.
- **Interactivity** - Moodle is a platform that offers an **interactive learning environment**, allowing students to collaborate and communicate with their peers, teachers, and other experts. MOOCs, on the other hand, are typically offered as **asynchronous courses** and rarely include the same level of interactivity and networking.
- **Assessment** - Moodle offers assessments such as **quizzes, tests, and other activities** that can be used to grade student performance. MOOCs typically offer open-ended or peer-reviewed assessments, such as written or video-based assignments.
- **Certification** - Depending on how you set it up, Moodle provides certification for the successful completion of courses. MOOCs offer certificates for online university programs but are typically not counted towards degree credits.

### 2.1.7. Digital campus (virtual)

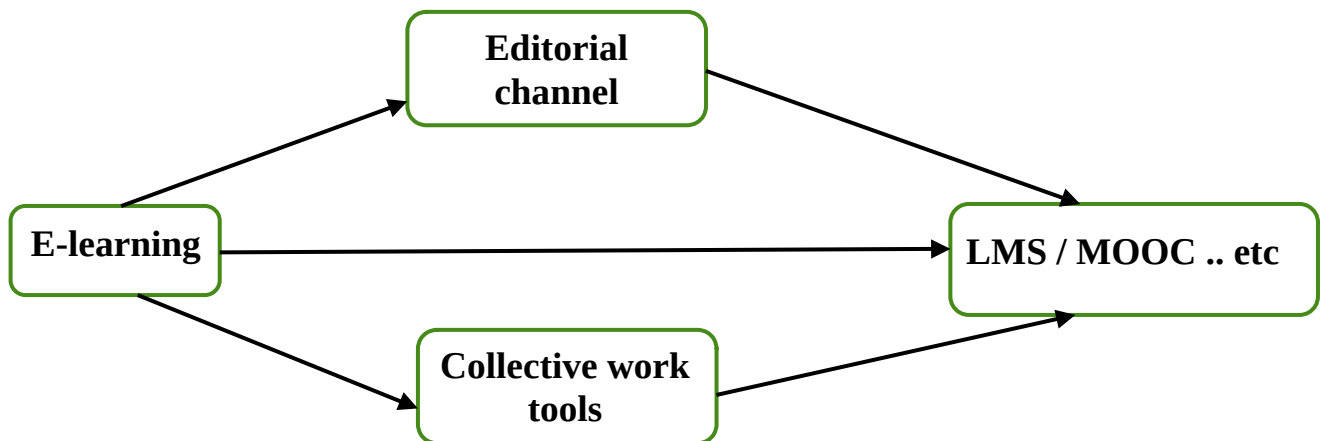
A sort of LMS embodying the spaces of an educational campus (learner spaces, teacher spaces, etc.)

## 2.2. Tools (communication, collaboration, production)

Set of tools allowing:

- synchronous communication (chat, instant messaging, videoconferencing or audioconferencing)
- or asynchronous (forum, messaging)

### 2.2.1. Editorial channel



To produce an online course, we can use one or more approaches:

- we can use a single **LMS/MOOC platform**, just as we can publish the same course on **several LMS/MOOC platforms**.
- we can make do with the resources offered by **online learning platforms**, just as we can expand our resources with the use of **other tools and software** that help us manage and present the course correctly.

Online learning platforms (LMS/MOOCs) differ in format, activities, and supported course resources; that is, if the course is to be published on several platforms it must be created and transformed into several formats according to the requirements of these platforms. So, to publish a course on several platforms, we have two solutions:

- Either we create the same course several times with different formats to adapt it to different e-learning platforms (repetitive, and takes energy and time: **No recommended Solution!**)

- Either we create the course once with an **editorial channel**, then we use the export function offered by the editorial channel to transform it and produce it in different formats to adapt it to different e-learning platforms (**Recommended solution!** )

An **editorial chain** or **publishing chain** is the sequence of operations (or industrial process) by which a document written by an author is transformed into a publishable and published document.

It consists of **formatting** the written document, **developing document models**, and carrying out the necessary file **conversions**. It also takes care of the **storage** and **distribution** of documents.

To write a personal document, an office suite is more than sufficient. But when an organization must manage its documentary production more precisely and distribute it in multiple formats or in large volumes, an editorial channel becomes essential.

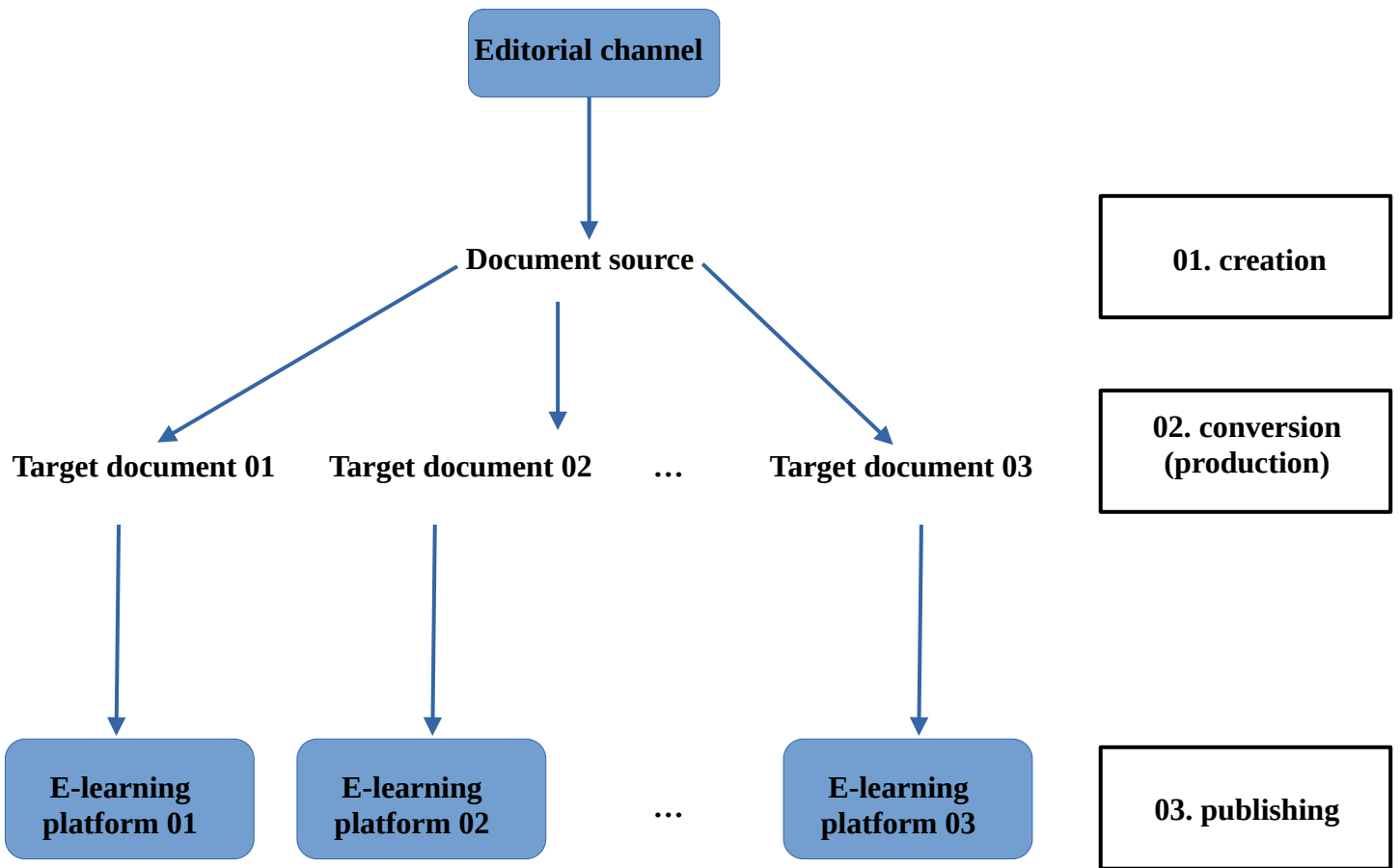
The editing chain allows the conversion of **source documents** into **target documents**.

Source documents must be easily editable and convertible.

The target documents must be easily readable on different media (browser, electronic reader, PDF reader, word processor, paper, etc.). The separation of target documents and source documents makes it possible to apply the formula: “edited once, converted to all formats”

- **In summary**, editorial channels provide a response to the following needs:

- produce in different output formats without duplicating content (multi-media publication);
- enforce a graphic charter in a multi-author environment;
- allow greater simplicity during updates (whether of content or of the graphic charter);
- allow authors to provide content without mastering publication technologies.



**Example: The Opale editorial channel**

Opale is among the oldest editorial channels, it is the most used editorial solution at the community level, particularly for writing university and school course materials.

The Opale model is quite traditional at first glance - it is essentially a tree-based presentation of lessons and exercises.

The Opale model is built around modules which script learning activities and evaluation activities. These activities are themselves made up of grains of content and exercises. A grain of content is made up of a sequence of titled and typed blocks (for example with semantic markup indicating important content, legal content or even a definition).

### 2.2.2. Collective work tools

Collective work systems make it possible to share files, exchange expertise or even facilitate internal exchanges between learners and educators.

There are several types of collective work tools:

- **For file sharing:** Dropbox, Google Drive, Microsoft SkyDrive, Office 365, Oodrive... These solutions offer files saving and sharing services. Some allow you to go further and collaborate with several people simultaneously on a text document, a spreadsheet or a presentation.
- **For videoconferencing:** Microsoft Office Live Meeting, Glowbl, Skype, WebEx, Zoom... Videoconferencing facilitates collaboration between the teacher and their remote students.
- **For project management:** Asana, Azendoo, Basecamp, Doodle, Genius Project, Intra'know, Mattermost, Slack, talkSpirit, Trello, Wimi, Wunderlist... These tools allow you to plan and manage projects with several people, for example by creating collective task lists or specific discussions.
- **For university social networks** we can cite: blueKiwi, Jive, Tibbr, Yammer or soon Facebook at Work... Social networks are a privileged place both for working in a team and creating social links between students.

### 2.2.3. Office software

Office software is the set of techniques and means tending to automate office activities and, mainly, the processing and communication of speech, writing and images.

**Microsoft Office** and **Libre Office** are examples of effective and easy-to-use office suites for performing various office tasks.

## 2.3. Learning methods

- **Online-learning:** distance learning using the web and internet.
- **Blended learning :** Teaching modality reinforcing traditional classroom teaching with resources, activities and online monitoring
- **Virtual class:** Reproduction of the real class online. The only difference is that the actors are not located in the same place.
- **Enriched face-to-face:** This is classic classroom teaching to which ICT tools have been added (computer, interactive whiteboard, video projector, Internet connection, etc.)

#### ***2.4. Teaching/learning models***

- **Knowledge Transmission** : Traditional model widely used in schools, based on the transmission of knowledge from an expert (the teacher) to a student.
- **Knowledge Construction** : Educational model soliciting the participation of the learner by putting them in situations in which they are pushed to create their own learning.