

Compendium of Augmented Blended Teaching & Learning for Open Pedagogic Tools

Blended Learning Tool Evaluation - Moodle

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Co-funded by the
Erasmus+ Programme
of the European Union

The European Commission support for the production of this publication does not constitute an endorsement of the contents, which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. (Project №. 2020-1-PT01-KA226-HE-095042).



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Table of Contents

| | |
|--|----|
| 1. Introduction | 5 |
| 2. Testing and evaluation of the tool | 5 |
| 3. Functionalities supporting blended learning | 6 |
| 4. Video Tutorial and PowerPoint slides | 12 |

Table of figures

| | |
|---|----|
| Fig. 1. Moodle official logo | 5 |
| Fig. 2. Official Moodle statistics with geographical distribution of platform installations (https://stats.moodle.org/) | 7 |
| Fig. 3. Types of resources available by default in a Moodle course | 8 |
| Fig. 4. Interface for adding activities in a Moodle course | 9 |
| Fig. 5. Example of quiz interface in a Moodle course | 10 |
| Fig. 6. Example of a badge configured in a Moodle course | 11 |



Report Overview

This document describes Moodle as a tool to support blended learning. Following testing and evaluation, it discusses the functionalities and how the tool supports educators in their professional activities, namely:

- Professional Engagement
- Digital Resources
- Teaching & Learning
- Assessment
- Empowerment of Learners
- Facilitating Learners' Digital Competence



1. Introduction

Moodle (Modular Object-Oriented Dynamic Learning Environment) is the world's most popular open-source platform for Learning Management Systems (LMS). Originally developed as part of Martin Dougiamas' doctoral research, the Moodle educational process management system was officially released in version 1.0 on August 20, 2002. The latest stable version (September 2021) is Moodle 3.11, and the next major release, Moodle 4.0 is scheduled for an official release in November 2021.

The Moodle project is currently led and coordinated by the Australian company Moodle HQ, which is working with Moodle partners and a significant community of users and developers in order to continuously adapt it to the most demanding learning requirements.



Fig. 1. Moodle official logo

The most important functionalities of the platform are described below.

Through Chat or Forum tools, Moodle allows fast and efficient communication between platform users (administrator, trainers, learners and program coordinators). Moodle allows the implementation of collaborative learning, in which students, working in groups to solve case studies or in debates on certain topics of interest, can share their experiences with other students and can learn from each other. Individual, self-paced learning is also provided via the great variety of activity and resource types that it includes, allowing users to access the content and complete the activities any time, anywhere, and on (almost) any device. The platform offers the possibility to manage educational resources, such as: course support materials, auxiliary teaching materials, audio or video files, as well as other information on the evolution of the learning process.

Moodle provides tools for organizing activities within a large array of educational scenarios (ranging from classical educational programs – pre-university and university programs, life-long learning or vocational training programs) and includes: lectures, seminars, case studies, debates, self-assessments, evaluation of tutors and learners. There are also tools that allow educators or trainers to move from classic course materials and Power Point presentations to interactive and multimedia course materials.

And last but not least, Moodle includes a number of tools for assessing learners by tutors, tutors by learners, and managing the results of these assessments, which allows for a detailed analysis of the impact of the educational process.

2. Testing and evaluation of the tool

Moodle has been used by the **Distance Learning Centre** (currently the **e-Learning Centre**) of the Politehnica University of Timisoara for more than 10 years as the platform dedicated to the distance learning as well as the Masters' learning programs in the University. The experience of the



development and technical administration team behind the Moodle-based platform provided most of the insights of this report, coupled with the periodical assessment by the students of the various aspects in using the application.

The Virtual Campus of UPT (<https://cv.upt.ro>), the Moodle-based e-Learning platform of the university, is currently being used for:

- Hosting course materials: text and images, embedded audio-video files, interactive content like H5P, etc.
- Providing student activities: assignments, collaborative work (wiki, glossary and databases), workshops.
- Student evaluations: quizzes (either self-evaluated or manually graded), lessons, home assignments.
- Auxiliary tools: attendance tracking, student reports.
- Communication channels: news and discussion forums, direct messaging, real-time chats, audio-video conferencing, social courses.

Some of these functionalities required the installation of third-party addons, but since this report aims to provide an overview of Moodle's potential for use in various educational settings, they will be mentioned here as well (indicating the additional extension).

3. Functionalities supporting blended learning

The main functionalities of Moodle presented in the context of blended learning scenarios are organized in the following categories:

- Professional Engagement
- Digital Resources
- Teaching & Learning
- Assessment
- Empowerment of Learners
- Learners' Digital Competence

3.1. Supporting Professional Engagement



Moodle is by definition a Learning Management System. Not only does it provide a framework for hosting the content that users need to access in order to complete their training or learning process (which is the main function of a Learning Content Management System or LCMS), but also actively contributes to the acts of teaching/learning/training by providing the tools necessary to ensure effective communication between the members involved in this process, and a wide array of evaluation, analysis and management tools, thus creating a coherent educational ecosystem. This contributed greatly to the popularity of the platform, which is used all over the globe by educational institutions, both public and private, companies, organizations or individuals.

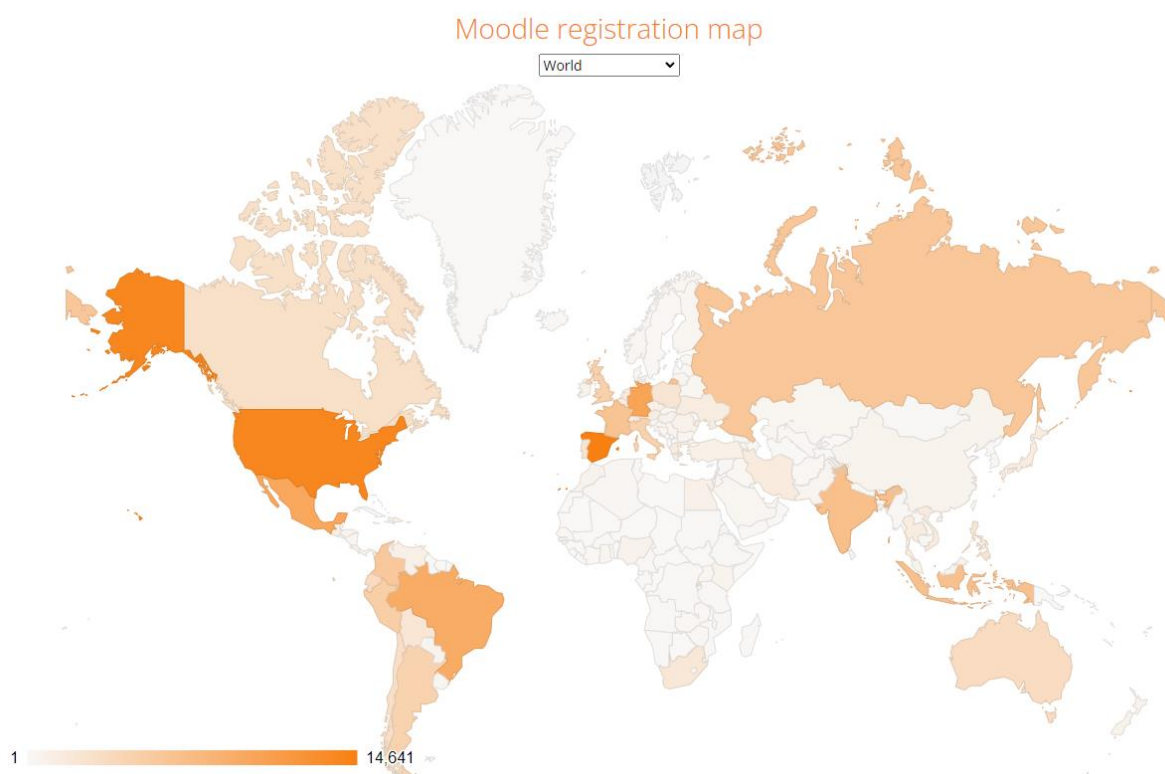


Fig. 2. Official Moodle statistics with geographical distribution of platform installations (<https://stats.moodle.org/>)

Aside from the open-source platform (called Moodle LMS), the organization responsible for its continued development, Moodle HQ, has released a suite of other applications adapted to different environments (<https://moodle.com/products/>). The official Moodle App integrates many of the LMS functionalities with a large variety of mobile (and desktop) ecosystems. Moodle Cloud offers ready-to-go solutions to anyone needing hosting and support in deploying new instances of Moodle, while Moodle Academy provides a learning hub for the large global community.

Of note is Moodle Workplace (<https://moodle.com/workplace/>), a special version of the base LMS, geared towards the corporate environment. It aims to be a customizable platform streamlining onboarding, workplace learning, automation of common processes and compliance management.

Some of these solutions are part of the Moodle HQ business model and therefore require fees or subscriptions, however Moodle LMS remains open-source and free to use in any educational (public or commercial) scenario. The Moodle LMS platform is the focus of this report.

3.2. Supporting Digital Resources



As previously stated, all Learning Content Management Systems provide ways for users to access learning materials. In Moodle, an authenticated user has a set of predefined privileges grouped under the concept of roles, which are allocated in specific contexts. Thus, they can have the role of Tutor in the context of a course, and the role of student in another, all the while being an “authenticated user” outside of these contexts.

Inside a course, users with appropriate privileges (usually course creators, or editing teachers) can configure the learning experience mainly with the use of resources and activities.

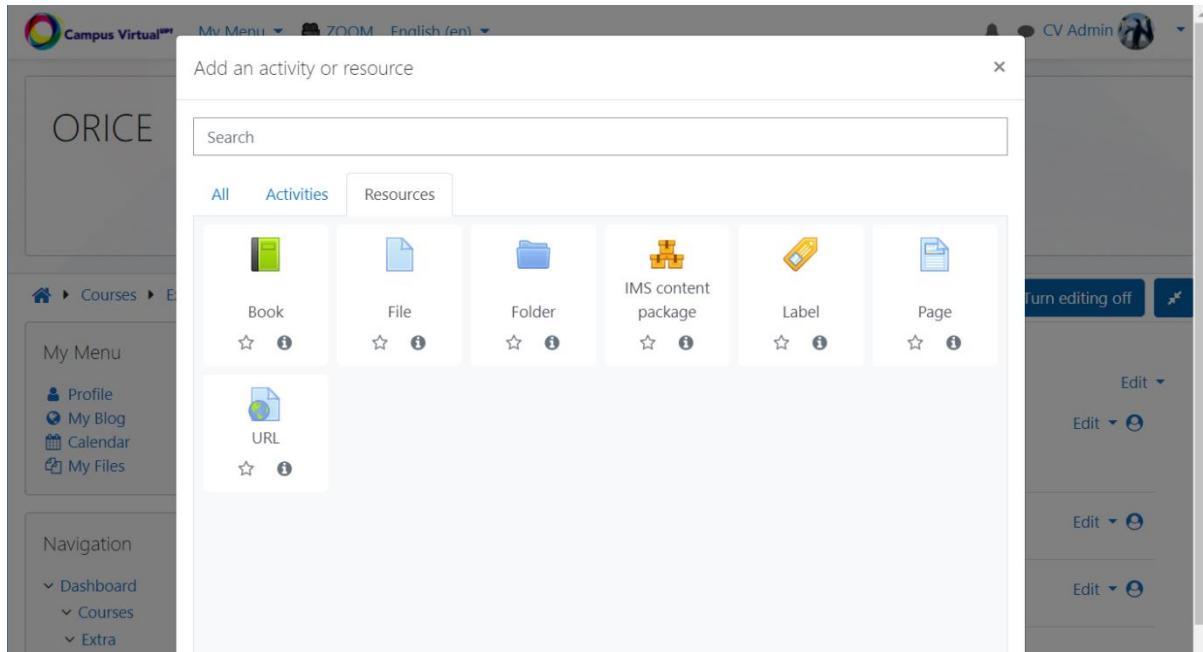


Fig. 3. Types of resources available by default in a Moodle course

By default, the following types of resources can be added to a course:

- **Pages** – represent the most versatile type of content that can be provided to learners. Essentially fully functioning webpages, they can include text, images, and any type of embedded content commonly found in websites: audio/video content (either stored on the current server, or on a public video content service like Youtube or Vimeo), advanced interactions using Javascript or Java Applet scripting, etc.
- **Files** – are the fastest way of adding content to a course if that content is already prepared in another context (for instance, as written chapters of a book, or offline Presentations). Some file types can be embedded directly in the course (usually PDF), while others require users to download and open them on their terminals.
- **Folders** – allow files to be grouped semantically according to their purpose or any other criteria, while also allowing users to download them all at once with the help of an automatically generated file archive.
- **Books** – were introduced relatively recently in Moodle, and provide a logical structure to online webpages, by grouping them like the chapters (or pages) of a virtual book, complete with sequential navigation and a table of contents for easily finding the desired information.
- **URLs** – can be used to introduce external resources in the main section of a course. They provide additional functionality to simple urls present in any piece of text, such as conditional visibility rules, activity tracking or completion, etc.
- **Labels** – serve as visual separator without dedicated sections that can be accessed on click.



- **IMS Content Packages** – make it possible to store chunks of material in a standard format which can be re-used in different systems, without having to convert the material into new formats.

One of Moodle's biggest strengths is the community of users behind it, including many programmers who contribute to the development of the platform, usually by creating new functionalities with the help of installable plugins (<https://moodle.org/plugins/>). Anyone can download a new type of resource or activity, graphical template or repository integration, all with the purpose of providing the necessary course materials to all the learners who have access.

3.3. Supporting Teaching & Learning

There are no explicit limitations in using Moodle either for online-only learning, or in a blended-learning configuration (face-to-face interactions, supplemented by the materials and interactions available on the platform).

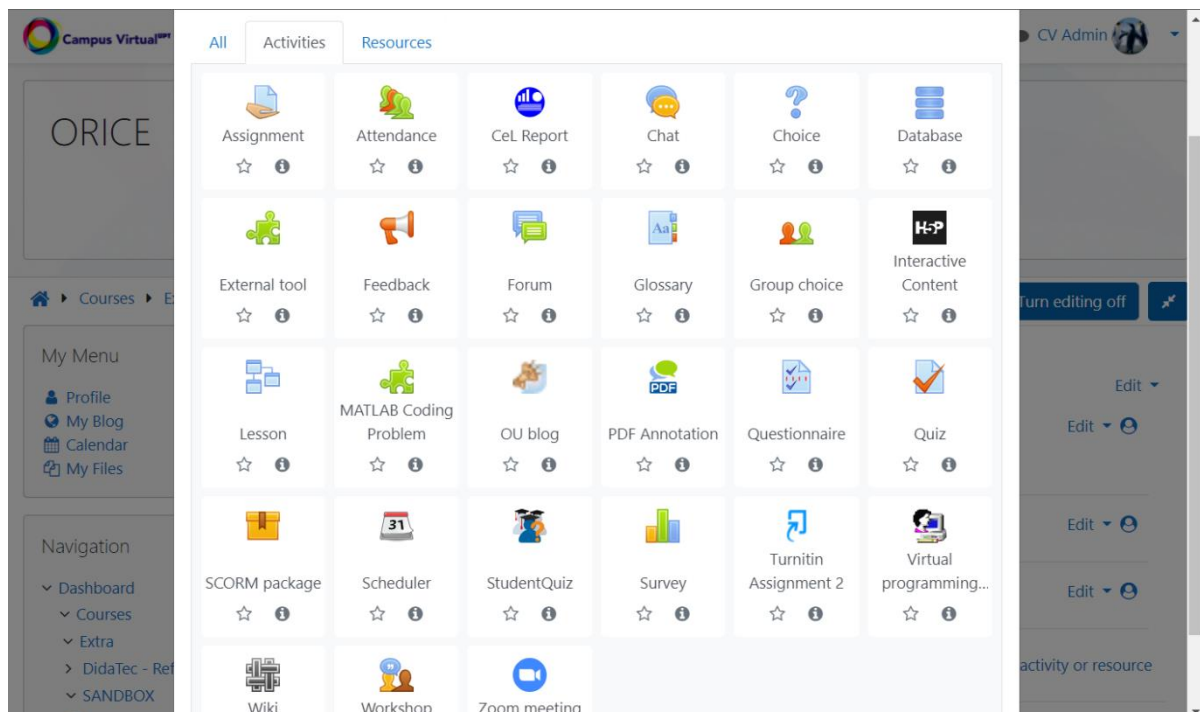


Fig. 4. Interface for adding activities in a Moodle course

A tutor can configure many types of activities in a course in order to enrich either the learning experience, or the management of the educational process as a whole. There are tools for communicating with the learners (such as news or discussion forums, group chats, or one-on-one discussions via instant messaging), collaborative activities (like Workshops, Wikis, Glossary or Databases), or highly interactive content such as HTML 5 Packages (H5P).

And with the help of third-party plugins, additional functionalities can be added, like keeping attendance, configuring virtual programming laboratories or providing integration with video-conferencing systems.

3.4. Supporting Assessment

Teachers have many possibilities for assessing their students' performance. They can configure assignments where learners must upload a file or create an online essay, or quizzes with multiple-choice questions which allow for automatic grading and instant feedback upon finishing the attempt.

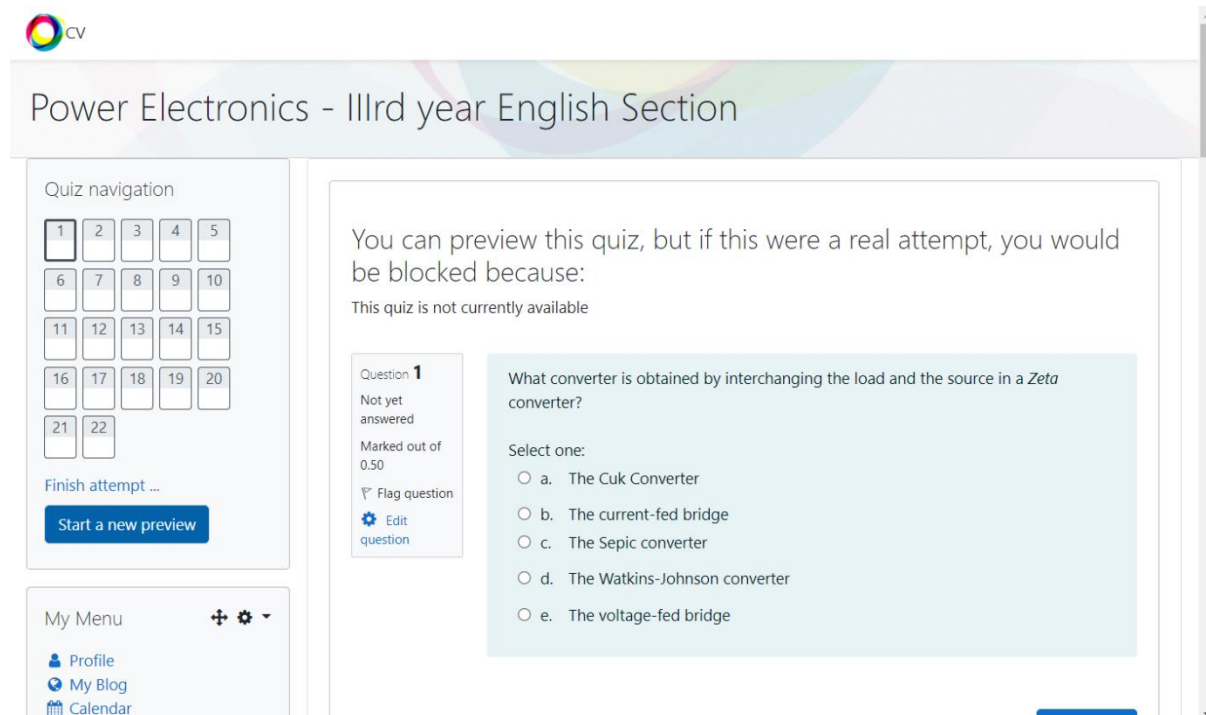


Fig. 5. Example of quiz interface in a Moodle course

Course teachers (or other types of users with the appropriate privileges) can also access extensive reports with all the actions that a student has undertaken in the context of the course, allowing for a comprehensive analysis of the students' activity.

3.5. Supporting the Empowerment of Learners

Ever since its inception, Moodle adhered to the social constructivist pedagogical philosophy which states that learners are active participants in the educational process, rather than passive consumers of information.

Multiple activities can be configured to allow students to communicate, evaluate and provide feedback to their teachers. Informational surveys can also offer insight into the effectiveness of the learning process.

Also, there is a glaring disparity between the number of resource types available in a course, which are meant to be "consumed", and the number of activity types, which require conscious actions from the students' part. Learning by doing is part of the core philosophy of the platform, which probably contributed to its effectiveness and popularity.

3.6. Facilitating Learners' Digital Competence

There are multiple ways of certifying a users' competence. From either numerical or letter-based grades, to pass-fail scales, and from resource/activity completion statuses, to course completion and competency frameworks, the possibilities are numerous.



One of the most popular forms of recognition today are the micro-credentials. A teacher can configure badges inside a Moodle course, and set-up automatic criteria for issuing these badges to the students. Once issued, they certify an achievement or a set of skills that the learner has demonstrated at one point.

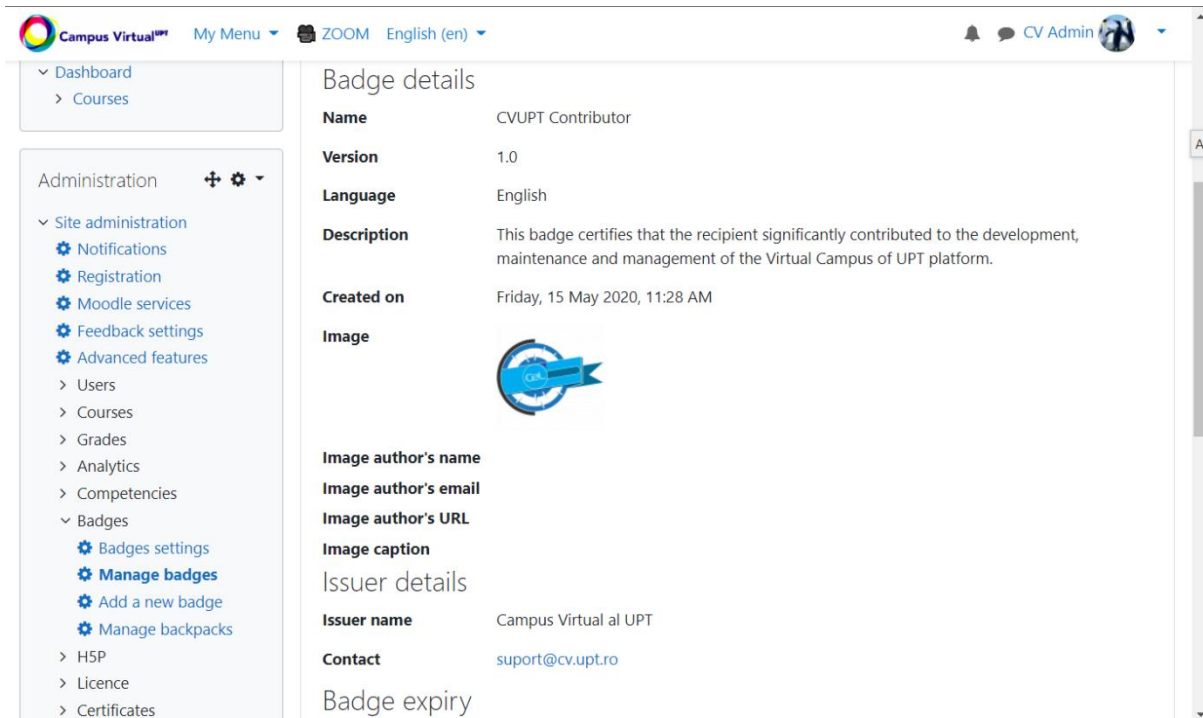


Fig. 6. Example of a badge configured in CVUPT

Some of the main functionalities previously discussed are summarized in the table below:

| Summary of functionalities | |
|----------------------------|---|
| Course resource formats | <ul style="list-style-type: none"> • Webpages • Files • Folders • Books • URLs • Labels • IMS Content Packages |
| Communication tools | <ul style="list-style-type: none"> • News/Discussion/General purpose forums • Chats • Direct Messaging • Audio-video conferencing (via third-party integration) |
| Student evaluation | <ul style="list-style-type: none"> • Assignments • Quizzes • Activity reports |
| Gradebook | <ul style="list-style-type: none"> • Numerical or letter grades • Custom scales (like pass/fail) • Activity/course completion • Competency frameworks |
| Certification | <ul style="list-style-type: none"> • Course Badges |



4. Video Tutorial and PowerPoint slides

The ACADIGIA resources for Moodle are available on the website [here](#).

An extensive list of tutorials that we produced for the Virtual Campus of the Politehnica University of Timisoara (CVUPT) is publicly available here:

https://www.youtube.com/playlist?list=PLFHoDIU-4IR1z59UBzzjFfR1bDt1AS_ou

Other open resources about the platform are also available here:

<https://elearning.upt.ro/en/>