

Handbook on the effective use of virtual learning platform and ICT tools for online courses

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The screenshot displays the Moodle LMS interface for the course 'Technical English for Renewable Energy'. The interface includes a navigation menu on the left with options like 'Home' and 'Courses'. The main content area shows a video player titled 'Technical English online tutorial #1' with a play button. To the right of the video is a navigation sidebar with a tree view showing the course structure: 'Home', 'My home', 'Site pages', 'My profile', 'Current course', 'Technical English', 'Participants', 'Badges', 'Technical English for Renewable Energy', 'Renewable Energy and Rural Development', 'Photovoltaic Energy', 'Biomass', 'Wind Energy', and 'Questionnaire for students'. Below the video player, there are sections for 'Renewable Energy and Rural Development' and 'Photovoltaic Energy', each with a list of units and their respective icons.



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



GEOLIN

GENERAL ELECTRIC

Place and year of edition:
Gyöngyös (Hungary), 2016

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DOI: <http://dx.doi.org/10.6035/IN2RURAL.2016.07>

The PDF version of this document is available in:

<http://in2rural.ub.ro/>, <http://in2rural.uji.es/> and <http://repositori.uji.es/xmlui/handle/10234/154485>

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Overview

One of the major aims of IN2RURAL Erasmus+ Strategic Partnerships project is to develop online learning courses with high-level interactive online and offline educational material particularly for higher education students who intend to obtain specific information on renewable energy resources. There will be two different types of online course developed during the project. One of the courses is called “Technical English for renewable energy” (IO8) course, providing a base for the online course of “Renewable energy for local development” (IO9) with professional and academic content consisting of four modules: renewable energy and rural development module, photovoltaic module, biomass module and wind energy module. The compiled materials will include information about delivering online learning materials to students by means of assessments and tracking, collaboration and communication tools by delivering them with a high degree of practical information.

The elaboration of each section within the “Renewable energy for local development” course has been divided between the participating project partners. The Spanish lead partner is responsible for the elaboration of the renewable energy and rural development module along with the photovoltaic module, while the Hungarian partners have created the biomass module and the wind energy section has been developed by the participating Romanian organisations.

Both online courses and all four modules within “Renewable energy for local development” course follow a homogeneous structure. One of the main purposes of the handbook is to provide useful information for teachers on how to plan and prepare online educational material by defining the common elements that the course material of each module should include, providing a short documentation on how the sample files have to be prepared and then uploaded to the online learning platform. It also provides instructions with orientation purposes and samples to teachers on how to prepare the suitable framework for a learning material.

Besides the e-learning material, the online courses also involve self-introductions of students and topic discussion forums, a glossary for each renewable energy resource module and additional extra materials, such as photos, presentations and extra bibliography. The “Technical English for Renewable Energy” course will contain a glossary providing students with the specific words and expressions, allowing them to follow the modules of the “Renewable energy for local development” online course.

The online course provides opportunities both for individual and/or group discussion work, and the present handbook will guide the user how to become acquainted with the effective uses of virtual learning platform and ICTs along with some teaching methods to convey learning information. One of the main reasons for providing e-learning material through an electronic website is to promote interactivity among future students. These days, both teachers and students must rely on interactive learning materials besides the traditional printed texts during their professional work. ICT-based education has undoubtedly affected and is affecting the learning process of students and it is important to underline that a good ICT-based education has the potential to increase students’ motivation towards acquiring the required knowledge. Furthermore, it can be declared that ICT-based education undoubtedly helps to promote in connecting school experiences with work practices.

In sum, the principal aims of the present “Handbook on the effective use of virtual learning platform and ICT tools for online courses” is to provide

- practical guidelines for teachers on how to provide learning material in ~.doc and ~.xls sample files that will be later transformed as an output into interactive and enjoyable electronic learning material,
- specifications for each parts of the learning platform, so that all the teachers working in different modules have a clear idea of the material they have to prepare for the course,
- a standardized evaluation for the modules.

1. The first issue to start with is copyright

The Copyright Law itself is rather complex and quite situation-based. The only way authors can avoid plagiarism or copyright violation is that they pay attention to the certain and specific rules and regulations. What is a copyrighted product? Different types of work of art (including digital ones) protected by copyright such as books, articles, documents, pictures, video footage, animation files, database and webpage by giving the authors the exclusive right to exclude others from using them without permission. The term 'copying' means printing, photocopying and similar means of mechanical duplication of a work of art or authorship. Simply, it is not permitted to reproduce copyrighted materials without the written authorization of the copyright holder unless it meets the requirements of the Copyright Law's doctrine of "fair use". Fair use policy allows a limited number of conventional uses, but if any doubt arises about what falls under the term "fair use", then it should be considered to be copyrighted.

Regarding the project material, when building an educational website with different teaching material items the Copyright Law permits use of a portion of a work without the copyright owner's permission for purposes such as teaching, scholarship, research, criticism, and comment. Four criteria must be considered when determining whether you are making "fair use" of a copyrighted work: (1) your purpose, including whether it is commercial or non-profit educational use; (2) the nature of the work itself; (3) the percentage of the work used, and (4) the effect of the use on the work's market value. These criteria allow teachers to distribute protected portions of work in their classes.

As the lead partner of the project (Universitat Jaume I – UJI) has an own strict description regarding the types of materials that can be legally used in university teaching (<http://cent.uji.es/pub/lpi-docencia>) we consider some details of UJI copyright recommendations. Certain recommendations will be reproduced in English, provided in the previous link by UJI Education and New Technologies Centre (CENT).

There are two ways to provide learning material available for students in the Moodle platform: either by hanging files in the platform or by providing external links to other web pages.

Legally, the use of external links to other available works on site is safer and they can be published, as long as there is no information regarding the illegal distribution of the works.

Images and videos can also be inserted freely from other websites, as long as these websites provide an embedded code. In these cases, they have the same consideration as the use of external links, for example YouTube or Vimeo videos. In the case of files, the following types of works or fragments of works can be uploaded legally in the Moodle platform:

Own works

At first, teachers can distribute work among students of which they are the authors, provided they preserve the required rights: specifically, only if the authors have not given out exclusive rights to others (as for example an editorial/publishing house in the case of a book or an article). Therefore, it should always be ascertained that the authors have not given out exclusive rights and if by any means they have, the duration of time has to be checked.

In case of works done in collaboration, the rights belong to all the authors and therefore the approval of all the authors is required. In the case of collective works (results of the initiative of one person), the rights are usually related to the person directing and coordinating the preparation of the work, unless something else has been agreed among the participants.

In case of scientific articles, some publishers give permission to authors to publish pre-print copies, but mostly only after a certain period of time. All the above-mentioned facts and details should be considered, in order to avoid problematic situations.

Works of other authors with authorization

To be able to distribute works by other authors among students, it is essential to obtain an explicit (written) authorization by the person or the rights holder entity, which can be the author or a publisher. However, there are some exceptions to this requirement, the details of which are as follows:





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Nowadays these licenses are used extensively, for example [Wikipedia](#) (both the text of articles as many of the images), some of the images from [Flickr](#) or in periodic publications, including some journals (for example the [open access journals directory](#)).

Google allows the user to search for works published under "Creative Commons" licenses using the [advanced search options](#).

The license of each work indicates the specific conditions of use given by the author. There are various conditions provided by authors that may appear during the adaptation of their works. The first condition is generally included in all "Creative Commons" licenses as binding, while others are optional and the author of the work can decide whether to apply them or not.

| | | |
|---|-------------------|---|
|  | Attribution, by | One must recognize the authorship of the work, stating at least the name of the author / s, title of the work and, if applicable, the URL link of the work |
|  | NoCommercial, nc | The author only authorizes non-commercial uses of the work. "Commercial use" means obtaining a commercial advantage or monetary compensation. |
|  | NoDerivatives, nd | The author only authorizes use of the work without modification. A "derivative work" would be a work created from the original purpose of the license. For example translation, or modify or rewrite the work, etc. |
|  | ShareAlike, sa | Derivative works are authorised, provided they maintain the same license as the original work once they are disclosed. |

The different [Creative Commons licenses](#) are the results of the combination of the different conditions. In case a complete work is published in the Moodle platform without any modification, all Creative Commons licenses could be used. In other cases, when changes need

to be made or a translation of the work is implied, one must check the exact conditions included in the license.

Public domain works

Generally, exploitation rights of a work become extinct seventy years after the death of the author (although this period may vary for some types of works and according to several factors). After this period, the piece of work enters the public domain and anyone can use it free, without asking for permission from anyone. Although, users are obliged to indicate the authors of the work in order to keep the integrity of their work.

It is essential to clarify that once a work is available for public use, the original work should always be referred to. For example, the intellectual property rights of a subsequently made translation can be kept during the period of seventy years after the death of the author's translation. For example, the original expression [Qu'est-ce que la propriété?](#) (Proudhon, 1809-1865) can freely be used, but it cannot be guaranteed that all translations could be used and the rights should always be checked.

Book chapters, magazine articles or fragments equivalent to 10% of the total of all types of publications

In case of the above-mentioned materials, the following conditions are established:

- Materials can only be used for illustration purposes, and only at universities and public research centres
- The fragments will be limited to a chapter of a book, a magazine article or an extension of 10% of the work.
- The use of sound fragments or printed audio-visual works is not permitted.
- Materials can only be accessed by teaching/research staff and students of the university or the research centre.

Therefore, uploading materials of this kind in Moodle platform is permitted by paying very careful attention to its extension. This exception shall enter into force in November 2015 by generating economic rights.

Entire books or articles with special license for educational use

UJI Library provides access to a series of [portals](#) allowing the user to either read electronic materials online or download them in order to read them without a network connection. Access to these sites is only possible for teachers and students of the UJI network. If someone intends to use any of these books as study materials for a course in Moodle, it is advisable to post the link of the page where the book can be downloaded, so that all students can download them for themselves instead of uploading the file in the Moodle platform.

Citations

Fragments of the works of other authors may be included in one's own work as long as it is done as a citation. This type of use can only be for educational or research purposes and both the source and the name of the author/s of the work used must always be indicated.

Illustration for teaching

Teachers of formal education can spread among his student short passages of any work, except for university textbooks or manuals, provided that there be no commercial purpose and with the objective of illustrate the educational activity. The use of these works can only take place in the context of formal education, or distance learning, and the source and the name of the author / s of the work used must always be indicated. The law does not specify what extension can fragments have, they are only said to have "an extract or portion quantitatively irrelevant on the whole [of the work]"

There are some internet links that can be used to download pictures for free and without any conflict regarding copyright issues: [OpenPhoto](#), [Flickr](#), [Wikimedia Commons](#), [500px](#), [Public Domain Archive](#), [Pixabay](#), [Picol](#), [Jay Mantri](#), [Freeimages](#), etc.

2. The outlook of the Moodle platform: Technical English and Renewable Energy Courses

The aim of this chapter is to define common elements that the course material of each module should have, including the format and specification of each part and a short guide of how to implement them in Moodle platform.

An increasing number of national and international organisations – including educational institutions – are launching e-learning platforms recently. The reason for implementing them is very simple: they can be as good as traditional ones or even better with lower environmental impact and more effective learning at a much lower cost. In addition, they provide further benefits and advantages, such as:

- 24/7 availability,
- constant interactivity,
- objective evaluation,
- immediate response,
- student monitoring

The IN2RURAL project also intends to establish an e-learning platform to provide educational material for renewable energy courses. The potential of renewable energies is widely accepted all over the world. The EU2020 intends to obtain 20% of all energy from renewables. To achieve this goal, this requires preliminary steps. One of them is to train experts in green innovations. The IN2RURAL project has established several objectives:

- To increase the applicability of the learning processes by strengthening the relationship between the participating higher education institutions (Bacau, Romania; Castellon, Spain; Gyöngyös, Hungary),
- To identify and improve the key-competencies for the employability in the sector
- To introduce educational improvements and innovations,
- To strengthen the internationalisation, project management procedures and sustainability of the organisations,

- To promote the active participation of geographically disadvantaged groups,
- To improve the preparation of the students for the professional world.

To satisfy the needs of the project, IN2RURAL team aims to establish a Moodle e-learning environment as future learners are selected from geographically dispersed locations (three different countries). The Moodle platform of IN2RURAL project is planned to be instructor-led.

In instructor-led online and offline e-education, the editor teachers are encouraged to establish a linear curriculum for each course that has to integrate the content and activities through different – mostly interactive – media elements. The courses are planned to be self-paced sometimes; only the major deadlines would force the participating students to make progress. The role of the instructor would be to regularly monitor the students’ activities and evaluate submitted essays created by participating students. The IN2RURAL project plans to launch two separate modules with the following data:

| Title | Technical English for renewable energy course |
|------------------|--|
| IO related | IO6.- Open Educational Resources for “Technical English for renewable energy” IO8-A3.- Open online course of “Technical English for renewable energy” |
| Maximum students | Limited 30 students from KRF, UB and UJI (10 students each university) |
| Credits | 0.5 ECTS |
| Estimation | 3h/week (according to project description) |
| Duration | 1 February – 1 March 2016 |
| Participants | KRF (manager), UJI, UB |

| Title | Renewable energy for local development course |
|--------------|---|
| IO related | IO7.- Open Educational Resources for “Renewable energy for local development” |

| | |
|------------------|--|
| | IO9-A3.- Open online course of renewable energy for local development |
| Maximum students | Limited to 30 students from KRF, UB and UJI (10 students each university) (12 students later on selected for IO9-A4) |
| Estimation | 6h/week (according to project description) |
| Credits | 5,5 ECTS |
| Duration | 1 March – 1 July 2016 |
| Participants | UJI (manager), KRF, UB, HEL, GEO |

Detailed description of the ECTS within a module, and the duration of “Renewable energy for local development” course are as follows:

| <i>Module</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | |
|--|----------------------------|---------------------|----------------|----------------|----------------------------------|
| <i>IN TOTAL 6 ECTS and 4 MONTHS (1 MARCH – 1 JULY)</i> | | | | | |
| <i>name</i> | <i>RREE for rural dev.</i> | <i>Photovoltaic</i> | <i>Biomass</i> | <i>Wind</i> | <i>DEVELOPMENT OF STUDY CASE</i> |
| <i>hours</i> | <i>29</i> | <i>30</i> | <i>30</i> | <i>30</i> | |
| <i>ECTS</i> | <i>1</i> | <i>1.5</i> | <i>1.5</i> | <i>1.5</i> | |
| <i>TIME</i> | <i>MARCH</i> | <i>3 weeks</i> | <i>3 weeks</i> | <i>3 weeks</i> | |
| | | | | | <i>3 weeks (end June)</i> |

Each of the modules No. 2, 3 and 4 includes a theoretical part and a practical part. The theoretical part should cover technical alternatives and specification, economic approach, social and environmental impact and rural development aspects. The legal aspects will be difficult to be covered, so this aspect will only be pointed out. In the practical part, the teacher will present a fully developed study case of an application of the module covering the technical, economic, social, environmental and rural development parts. Each module should be offering 10 possible study cases of the specific technology applied to rural development to be implemented (30 in total), so that the students can choose one of the topics to develop it at the end of the module as part of their evaluation of the whole online course. Students could also propose a case study topic, but the related teacher should approve it, before being developed.

Each participating country will elaborate a different module of the OER for each considered renewable energy: Spain will focus on photovoltaic energy, Hungary will be specialized in

biomass and Romania will contribute with wind energy matters. Furthermore, an initial module relating application of renewable energy and local development will be included among the online courses. Thus, the Moodle site of the project will contain two courses:

Technical English for renewable energy course. This is the initial course containing the regularly used specific terms and expressions related to renewable energies and rural development. All learning materials will be developed in English, as the online course will be open to students from all participating HEI's.

The course will be divided into 12 units for a 12 occasion-long period that students are recommended to spend on learning technical English for renewable energy. The first three units will deal with renewable energy for rural development, units 4-6 will cover photovoltaic energy, and units 7-9 will be dedicated to biomass, while the last three units will relate to wind energy. Each unit will contain material that can be covered in 60 minutes.

When students click on '*Start here*' section, they will find a short video in which their English tutor introduces herself as well as tells them about the material, the learning methodology to be used during the language course, testing and the assessment criteria. The forum topics will be created by the English tutor, and students will be asked to participate in the discussions. However, students will also be able to create sub-topics about any difficult part of the course material they need help with. The forum will provide the opportunity for all the participants to communicate effectively online, and read earlier comments made while they were offline.

The online tutorial session will indicate the hours when the students can communicate with the English tutor real-time. There will be one hour per week provided for students to ask questions and clarify unclear parts of the material.

Students can obtain the certificate only if:

- they have participated in at least 80% of the debates proposed in the forum;
- they have achieved 60% of the final test score.

The result indicated on their certificates will be based on the score they achieve:

- 0-59% Fail
- 60-69% Good
- 70-79% Very good
- 80-100% Excellent

The assessment of each student will be reported via e-mail to UJI in order to prepare the certificates for the successfully participating students, as well as to each student's e-mail address to protect their privacy.

Renewable energy for local development course. This is the second course and covers four modules (RREE for rural development, Photovoltaic energy, biomass energy, wind energy). Each module is a partly instructor-led and partly self-paced. Students acquire the learning material by different, mostly interactive exercises (pdf files and comprehension check tests). Students are planned to go through the material individually and there will be tests, quizzes and essay questions that have to be worked out by all participating students. A forum here will also provide the opportunity for all the participants to communicate effectively with each other.

Each module starts with different forums (editing teachers will be allowed to open new forums and to close down old ones) with well-determined forum topics. In this part of the module, there will be a short introductory video of the teacher presenting themselves and the learning material. Furthermore, as the purpose of the forum is to interact with the students, it includes the following elements:

A forum to start with is for the introduction of the students, where they are asked to introduce themselves in a few sentences (name, study and why they think this course will be useful for them).

Further forums will start by the teacher presenting a certain aspect of the module/installation/new in the media and asking the student to participate in a debate.

The teachers will create the forum topics, and students will be asked to participate in the discussions. However, students will also be able to create sub-topics about any difficult part of the course material they need help with. The forum will work in the same way as it was described beforehand.

The learning material of each of the four modules of the “Renewable energy for local development” course is planned to be divided into a set of maximum 5 chapters with a maximum of three simple learning material resources written in pdf format. Each chapter is closed by a final test (for detailed description for each, please see later parts of this documents), and each module is to have a maximum of five chapters with a maximum of three subchapters in pdf format and a quiz related to each chapter.

In each module a maximum of 15 pdf files are proposed, within 3 – 10 pages long each (6 in average). This length should correspond to 30 h (1-1.5 ECTS) of each module. A minimum of $15 \times 5 = 75$ pdf pages is expected for each module.

Chapter No 6 will also be included in each module, containing free and optional learning material – extra material (e.g. set of pictures, videos, and useful links) should be placed here. It will also contain the videos recorded in the multiplier events (English documentation and short English subtitled video of the presentations). Interactive lessons will be explained as well, just in case someone wants to use it as a supplementary help. A photo gallery is added in Chapter 6 of each module, in which both teachers and students, indicating relevant information (location, year, details of installation), can upload photos. Bibliography for additional learning material section is also required.

At the end of each chapter of the first five chapters of each module, there will be a final test with a quiz of 20 questions. The Moodle quiz system will randomly choose five questions and students reach pass-level if they achieve 60% or higher.

The common templates of Word files (docs format, tables, references, etc.) and Excel files (for figures, quizzes, etc.) for all materials will be provided by KRF (see **Annex 1** and **Annex 2**).

The basic structure of the course is presented in Figure 1.

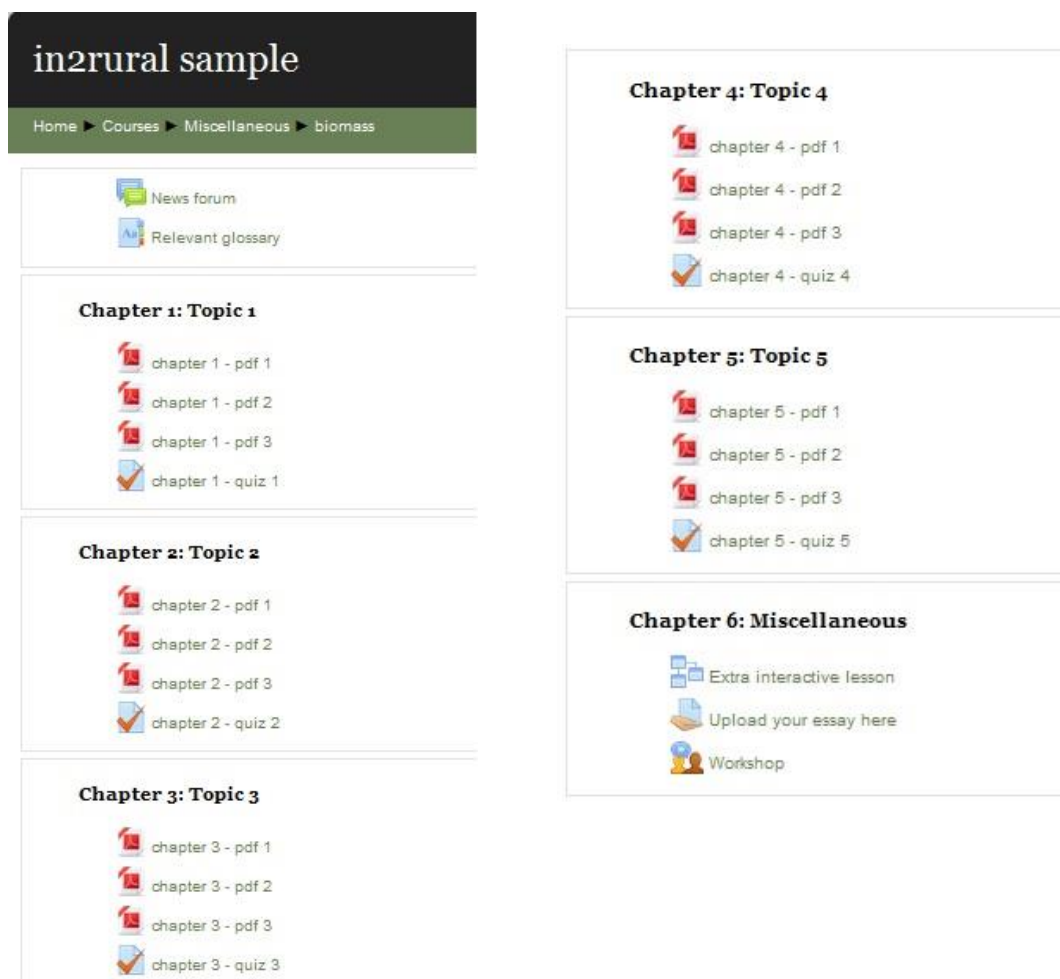


Figure 1. Basic structure in Moodle

KRF will set up the Moodle courses as the first step of implementation. Course elements will follow a linear structure meaning that one learning element can only be achieved once the preliminary condition is fulfilled by the students allowing them to continue the course consecutively on a systematic basis.

An English supervisor will also perform language supervision for all the developed learning material.

Contents of the Module No 1:

CHAPTER 1. First steps into renewable energies

- 1.1. The renewable resources: sun, wind, biomass.
- 1.2. Renewable energies along the history.
- 1.3. The distributed generation, a new electric power system paradigm.

Evaluation quiz for chapter 1

CHAPTER 2. The renewable energies panorama

- 2.1. Economic situation of energy and electricity around Europe
- 2.2. Renewable energy situation around Europe
- 2.3. Influence of the regulatory framework on the current panorama.

Evaluation quiz for chapter 2

CHAPTER 3. The renewable energies technology

- 3.1 Basic technological introduction the renewable systems.
- 3.2 Energy storage systems as a key factor for renewable energies

Evaluation quiz for chapter 3

CHAPTER 4. Development in rural areas

- 4.1. Introduction to the rural.
- 4.2. Differential aspects of development in rural areas.
- 4.3. Social sustainability and development. Living and working in rural areas.

Evaluation quiz for chapter 4

CHAPTER 5. How initiatives can promote social sustainability of rural areas

5.1. Considering actors, factors and agents.

5.2. Renewables as an opportunity for social sustainability and development in rural areas.

5.3. European financing for Renewable Energy and Rural Development

Evaluation quiz for chapter 5

CHAPTER 6: EXTRA MATERIAL

- Photo gallery section. Photos to be uploaded by teachers and students with a minimum info (location, year, details of installation)
- Material of Multiplier events (presentations and short English videos (5mn))
- Bibliography for additional/extra learning material section required

As mentioned before, all the other three modules (photovoltaic, biomass, wind) have the same structure. The contents of the remaining modules (No 2, 3 and 4) are the following:

Contents of the Module No 2:

CHAPTER 1: TECHNICAL ASPECTS.

Subchapter 1.1.: Principles concerning the use of photovoltaic/biomass/wind energy.

Conditions for efficient exploitation

Subchapter 1.2.: Technical alternatives and installation types for

"photovoltaic/biomass/wind" installations applicable for rural development

Subchapter 1.3.: Calculations and design.

Evaluation quiz for chapter 1

CHAPTER 2: ECONOMICAL ASPECTS.

Subchapter 2.1.: Estimation cost of the investment (materials, installations, spatial planning)

Subchapter 2.2.: Other costs (employment, management, maintenance)

Subchapter 2.3.: Analysis of economic efficiency and profitability

Evaluation quiz for chapter 2

CHAPTER 3: SOCIAL AND ENVIRONMENTAL ASPECTS FOR RURAL DEVELOPMENT.

Subchapter 3.1.: Assessment of environmental impact. Emissions and Life Cycle Analysis.

Subchapter 3.2.: Social and Rural Development impact.

Subchapter 3.3.: Vision for Future. Ideas and new suggestions for future.

Evaluation quiz for chapter 3

PRACTICAL PART

CHAPTER 4: FULLY DEVELOPED CASE STUDY OF APPLICATION OF photovoltaic/biomass/wind to RURAL DEVELOPMENT

Subchapter 4.1.: Introduction to the case study.

Subchapter 4.2.: Technical aspects of the case study

Subchapter 4.3.: Economical, environmental, social and rural development impact of the study case.

Evaluation quiz for chapter 4

CHAPTER 5: PROPOSED CASE STUDIES (to be developed by selected students)

Subchapter 5.1.: Case studies from 1- 3

Subchapter 5.2.: Case studies from 4- 7

Subchapter 5.3.: Case studies from 8- 10

Students can propose an own topic for their case study to be developed, which has to be accepted and approved by the respective teacher beforehand.

CHAPTER 6: EXTRA MATERIAL

- Photo gallery section. Photos to be uploaded by teachers and students with a minimum info (location, year, details of installation)

- Material of Multiplier events (presentations and short English videos (5mn))
- Bibliography for additional/extra learning material section required

Evaluation procedure for “Renewable energy for local development” course:

- Students can only obtain the certificate of the course if:
 - They have obtained 60% of mark in all chapters of all modules
 - They participate in at least 80% of the debates proposed in the forum
 - Fully develop a study case combining rural development (module 1) and one of the modules 2, 3 or 4 and have a positive evaluation from the teachers involved.
- Each study case will be supervised by the teachers teaching their corresponding module (2,3,4) and module 1 (for the part of rural development)
- The students will develop the study case during the last 3 weeks of June 2016.
- The student will have to present to the corresponding teacher his work on the case study at the middle of those 3 weeks, so that the teacher can give guidelines and propose improvements to be implemented
- The certificate of the course will include a grading system of Low (rejected), Good, Very Good, Excellent

3. Task 1 – Getting acquainted with E-learning and with Moodle

3.1 E-learning and its components

An increasing number of higher education institutions have been applying e-learning solutions for educational purposes because of several advantageous reasons. Studies show that teaching material delivered by adequate e-learning technology can be at least as effective as traditional training but at a much lower cost. In case of fundamental studies, a well-organised e-learning course cannot only become a successful educational program but a financial boom as well meaning that a popular e-learning course can increase the revenue of any educational institution.

Furthermore, the 21st century is the Age of Information Technology and different electronic devices (laptops, tablets, smart phones) surround us day by day that also make BYOD (Bring Your Own Device) programs live.

Developing useful and efficient e-learning programmes is rather time and money conscious compared to preparing classroom materials to the traditional - marker and whiteboard – form of education. In addition, if multimedia and interactive methods are also used they also significantly increase the budget costs. However, delivery costs for e-learning education are considerably lower than those for classroom facilities as

- the host institution is forced to pay for the instructor's time only once,
- participants' travel and work time is not lost in order to attend the pre-set classroom sessions.

There are many more or less applicable approaches to e-learning activities but a successful plan for implementing e-learning material must contain the necessary components. These components are the following:

1. e-learning content
2. e-mentoring
3. collaborative learning
4. virtual classroom

1. E-learning content is a mixture of learning material, interactive lessons and comprehension checks. Learning material resources are usually non-interactive resources usually: documents written in doc or pdf formats, presentations and multimedia files. Even though these materials are of stable and linear types, these pieces of material can easily be developed and generated. The only disadvantage is that students involved in this form of education might easily lose their interest. Thus, the linear approach must or should always be followed by the most common form of self-paced learning known as interactive lessons. An interactive lesson is a series of very small educational units including texts, graphics, animations, audio and video elements and these are always followed by built-in questions. The next learning material can

only be achieved if the student provides acceptable answer. In case of a wrong answer, the student is directed back to the relevant material where the prompt answer can be learnt again. This goes round and round until the learner provides the appropriate answer. In case of scored lessons (good answer: 1 point; wrong answer: -0.1) the lecturer is able to monitor students' progress.

Unfortunately, creating interactive lessons are a little time- (and money) consuming activities and most e-learning material developers tend to give up the precise knowledge transfer by not applying interactive lessons in their e-learning education.

All e-learning content must/should end up with interactive tests. These tests are composed to be able to measure students' progress. Moodle offers a great variety of test forms (e.g. multiple choices, true/false, pairing), and the best method is to apply the combination of those that are at our disposal. The test results are usually recorded and the achieved scores serve a quite significant role in determining the final achievement in students' evaluation. In certain cases, practice tests (or so-called mock tests) precede the real test. Mock tests are good for preparing the students/examinees to get familiar with the flow of their forthcoming final tests. Sometimes the same questions may occur in mock and the real tests. If mock tests are available, they help the candidates adjust to the exam-like circumstances before they do the real tests. In the renewable energy courses of IN2RURAL project, it is not compulsory to create mock tests.

2. E-mentoring offer different services (e.g. forums, tests, mails, online tutoring) that are available to students providing human and social dimensions to support them through the learning experience. It also gives feedback to students where they are in the process of learning, whether their accomplished achievement meets the requirements given by the lecturer or not. It is also useful for the lecturer as well, as they can collect information on students' private activity and team's collaboration providing useful hints in student evaluation.

3. Collaborative learning activities might vary from simple discussion questions and knowledge sharing to working together on a common case study. Sometimes students are required to estimate their own contribution (in %) to the project elaboration. It is strongly recommended to the task-developing teachers to ask for student contribution at the end of each collaborative activity. Online discussions are applicable when no language difficulties occur among the participating students. Thus, learners can easily comment their thoughts and exchange their ideas about the given course material or homework assignment. The answer to the question of the educator is provided by the students' individual contributions by sharing and commenting each other's knowledge. In our case, language proficiency of multinational (Spanish, Rumanian and Hungarian) students is going to be a milestone in the successful realisation of the courses. In case of international mini-teams, the lack of language fluidity may ruin the expected result. If language fluency is not provided or the participants are of very different origin, collaborative written assignments may be more efficient. Each team participant hands in his/her own thoughts in written format thus they have time to think the task over and collect all the phrases they want to use. We strongly advise our participating teachers to consider the spoken language issue and concentrate on written homework assignments.

4. Virtual classroom is not a compulsory element of an e-learning structure but on the other hand, it makes the learning activity 'live'. Of course, all participants must possess the appropriate technology and must use it properly. In addition, an appropriate Internet connection is also a crucial condition. In virtual classrooms, the instructor teaches remotely or real time, while the group of learners use a combination of multimedia devices (sharing). In case of multinational students, instructors must focus on the spoken language issue and must be well-prepared for managing silent students.

3.2 Synchronous and asynchronous e-learning

E-learning activities can be synchronous or asynchronous. The former takes place in real time communication among several people, requiring all participants to be present at the given

time. Skype-conversations or online chats are both typical forms of synchronous activities. Further possibilities of synchronous e-learning are video and audio conferences, live webcasting, application sharing, whiteboard, and polling. Time dependent events are called asynchronous communication. Pre-recorded videos provided by the teacher are usually uploaded into the learning platform and students are usually given a certain amount of time to watch it and do the relevant exercises. A self-paced course is a typical example of asynchronous learning, because the process of online learning can take place at any time. Blogs, emails, discussion forums are also examples of the latter form.

3.4 The quality of e-learning

Anyone intending to build an e-learning site must be cautious as one can devote a tremendously great number of working hours in constructing e-learning activities and yet, the long-awaited success may not arrive.

E-learning has been emerging as a brand new paradigm of modern education. Since 2011, when Stanford University launched its six initial online courses, its popularity has been unbroken. An increasing number of people get involved in this educational phenomenon with time. However, e-learning dropout rates are extremely high; it is around 70-80%¹. Levy examined different e-learning environments and suggested a variety of factors affecting user satisfaction with E-Learning². What are these key-factors?

- Learner-centred content: the e-learning realisations must be created in a way to be specific to the learners' needs, roles and responsibilities. Relevant knowledge should be provided with real comprehension checks.
- Interactivity: more than frequent learner interaction is needed to maintain attention and promote the process of learning.

¹ Tyler-Smith K., Early Attrition among First Time eLearners: A Review of Factors that Contribute to Drop-out, Withdrawal and Non-completion Rates of Adult Learners undertaking eLearning Programmes; available from: <http://jolt.merlot.org/vol2no2/tyler-smith.htm>

² Levy, Y., Comparing dropout and persistence in e-learning courses. In: Computers and education. Volume 48 Issue 2. February 2007, 185-204 pp

- Engaging content: multimedia skills, instructional methods and techniques must be both adequately and creatively used.
- Personalization: self-paced courses should be customizable to reflect learners' interests and needs.

3.5 Moodle

This part of the Handbook is to provide a general overview about Moodle, providing explanations and descriptions.

Moodle (Modular Object-Oriented Dynamic Learning Environment) is a free open-source learning management system developed in 2002. This e-learning platform serves the needs of educators and learners all over the world. It is probably the most widely used Learning Management System (LMS) in the world and currently has over 68 million users worldwide. Hundreds of Moodle developers around the world work on the growth of Moodle system. A well-planned Moodle site is made up of courses, which are pages containing the learning materials that teachers want to share with their students. A teacher in a Moodle course can select items from three different elements that together assist in the learning process: activities, resources and blocks.

An **activity** is a general name for a group of features in a Moodle course. Usually, an activity is something that a student does by interacting with other students and/or the teacher. There are 14 different types of activities found in the standard Moodle when the editing is turned on and the link '*Add an activity or resource*' is clicked (Figure 2). An activity in Moodle is a feature where students learn by interacting with each other or with their teacher. For instance, students might contribute in a forum, upload an assignment, answer questions in a quiz or collaborate with each other – and their activities can be graded. A teacher can add activities by turning on the editing and choosing an activity by clicking '*Add an activity or resource*' in a course section, then they select an activity from the activity chooser. (If the activity chooser has been turned off, a drop down menu appears instead). Activities usually appear in the central area of the course.

| | |
|----------------------|---|
| Assignments | Enable teachers to grade and give comments on uploaded files and assignments created on and off line |
| 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 |
| External tool | Allows participants to interact with LTI compliant learning resources and activities on other web sites. |
| 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 |
| Lesson | For delivering content in flexible ways |
| Quiz | Allows the teacher to design and set quiz tests, which may be automatically marked and feedback and/or to correct answers shown |
| 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 |

Figure2.Different activities in Moodle

A **resource** is an item that a teacher can use to support learning, such as a file or a 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 representing the type of resource. There are different kinds of resources defined in Moodle:

- Book - Multi-page resources with a book-like format.
- 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
- Label - 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
- Page - The student sees a single, scrollable screen that a teacher creates with the robust HTML editor
- URL - You can send the student to any place they can reach on their web browser, for example Wikipedia

Blocks are items, which may be added to the left or the right or the centre column of any page in Moodle. They may also be added to the centre of the Dashboard.

For further information, please visit moodle.org website.

4. Task 2a – Glossary for Technical English for renewable energy Course

4.1 Creating a glossary

A glossary with the most significant technical terms/expressions and with their clear explanations is indispensable. The first course (IO8 - Technical English for Renewable Energy) is based on the glossary (IO6) with two purposes: (1) it makes easier for students to find and understand unknown technical terms therefore, (2) it avoids students lose their motivation and the collection of technical terms enhances the English language skills of the project participants. All technical words used in the follow-up learning material must be defined in the glossary, as it is essential for students to get familiar with frequently used terms before getting on the academic course and help them improve their linguistic key competencies (HEI, SME, collaborators).

Teachers can edit the glossary by themselves, as an optional activity. When the glossary module is uploaded into the future Moodle website its content can be further extended by adding new technical terms.

Activity for teachers to do:

1. How teachers can extend the glossary?

First, they have to go to the Glossary part Moodle platform, then choose the task 'Add a new entry' and after giving the new concept and definition, please save your work with 'Save changes' button.

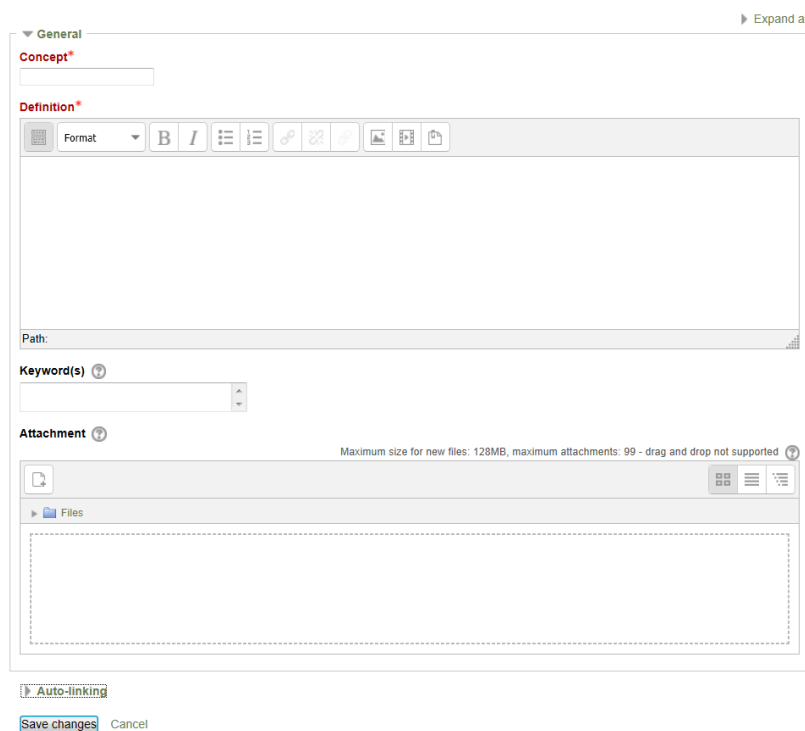


Figure 3. 'Add a new entry' window for a glossary

2. If you would like to extend the glossary with more items, please contact the administrator with an excel file as in Figure 4 and in the excel sample file in **Annex 3**, including all the technical terms you want to include.

| | technical term | definition |
|----|----------------|--|
| 1. | biomass | Renewable organic materials, such as wood, agricultural crops or wastes, and municipal wastes, especially when used as a source of fuel or energy. Biomass can be burned directly or processed into biofuels such as ethanol and methane. See more at biofuel. |
| 2. | biofuel | ... |
| 3. | | |
| 4. | | |

Figure 4. Sample excel file for extending glossary

4.2 Uploading a glossary

Importing glossary entries for those teachers who intend to upload the collection of technical terms into the Moodle site, the procedure is the following: as an editing teacher, you have access to your own glossary and go to settings > glossary administration > import entries.

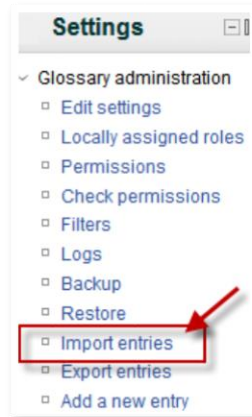


Figure 5. Import entries from a glossary (part 1)

Click the 'Choose a file' button and browse for the exported entries XML file on the teacher's computer then select the destination for the new entries. (If you want to modify an already uploaded glossary, you have to choose the current one). If you want to import some category information, click the checkbox and then click on the 'Submit' button.

Figure 6. Import entries from a glossary (part 2)

According to Moodle, there are possible problems occurring when importing entries and uploading a glossary:

- In case of mistakes made in the XML file (e.g. the <entries> tag being missing), manually constructed XML file or wrong template usage can be the cause
- Mind the tabs and spaces between the entries.
- In most cases, the import is halted or suspended, if any of the errors occur. Certain Moodle systems allow uploading in case of technical issues (strongly depends on version number)
- Duplication may also occur, but it does not cause a problem, not requiring any troubleshooting. After uploading the collection of entries, the editing teacher should press the 'Submit' button to duplication.

5. Task 2b – Simple learning material for Renewable energy for local development Course

5.1 Creating pdf files

The total length of learning material for each module (RREE for rural development, photovoltaic energy, biomass energy, wind energy) of Renewable Energy for Local

Development course has to be around 75-100 pages. The learning material of each module are planned to be divided into a set of 5 chapters and each chapter may further be subdivided into three subchapters. This also means that the total number of pages (75-100) should be divided into a set of maximum of 15 pdf files. The average length of a pdf file is six pages. As far as length is concerned, authors are asked to avoid using shorter than 3-page-long and longer than 10-page-long pdf files. All pages should be equipped with page number starting from the first page with number 1.

5.2 General guidelines- headings, title, footnotes

The learning material has a common template described in **Annex 1**.

The learning material should be typed and double-spaced on standard-sized paper (8.5" x 11") with 2.5 cm margins on all sides. We strongly recommend quite well readable Times New Roman using 12 pt. All pages should include a page header at the top of every page using the same heading patterns, as shown in Figure 7. Then type "Title of the course" in the header.

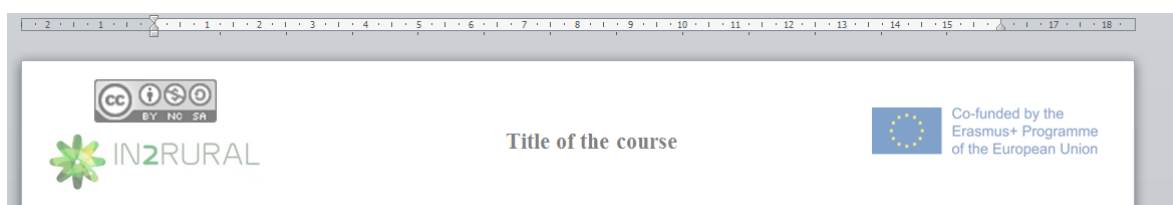


Figure7. Page header (own construction)

The title page should contain only the title of the module, chapter, subchapter, the author's name and institution.

MODULE X: NAME OF MODULE X
CHAPTER X. Name of chapter x
Subchapter x.x - Name of chapter x.x
Author
Institution

The title, author and the institution is typed with Times New Roman using 12 pt and only the name of the module should be written in capital letters. In case of more than one authors each of them should be mentioned in alphabetical order. If the authors work at the same institution, it is satisfactory to list the institution only once. If the authors are employed at different institution, each of them should be listed right below the author's name. Figure 8 shows an example.

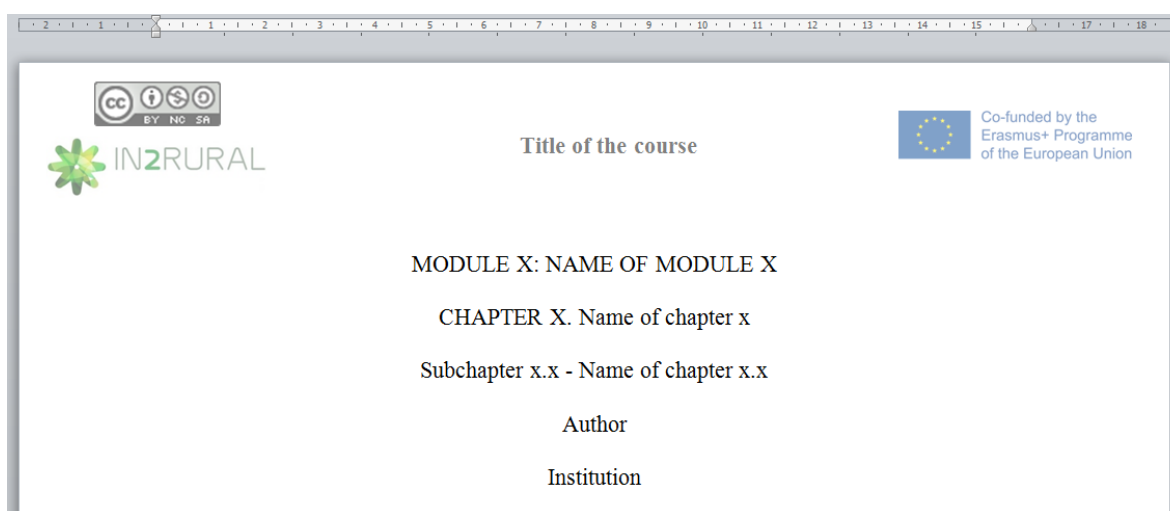


Figure 8. Page header plus initial data (own construction)

After the header and the initial data, a short (maximum five-line long), very brief **summary** must be presented, providing some essential information on the whole pdf file.

The learning material should be subdivided into several parts. The number of the parts is not strictly given as the total length of a pdf file; it may vary from three to ten pages. It is the teacher's task to decide how many parts s/he uses. At the end of the file a **references** section should also be included.

When the author wishes to use footnotes, they must insert a formatted number in superscript, following almost any punctuation mark. If footnotes appear in a sentence in parentheses, number (of the footnote) must be inserted within the parentheses. All footnotes should be placed on the bottom of the page on which they appear.

5.3 General guidelines - tables and figures

The aim of the tables and figures in any document is to promote the reader's understanding of the information in the document. All word processing software available today will allow the users to create their own tables and figures. Any data requiring more than two columns and rows should be presented in a table format. For simpler data-management, text arrangement is advised to use. "In order for quantitative data to be presented clearly and efficiently, it must be arranged logically, e.g. data to be compared must be presented next to one another (before/after, young/old, male/female, etc.), and statistical information (means, standard deviations, N values) must be presented in separate parts of the table." (from: <https://owl.english.purdue.edu/owl/resource/560/19/>)

| Table 1 | | | |
|--|------|--------|------|
| <i>Dogs Scoring Above Average on Intelligence by Breed and Gender</i> | | | |
| Breed | Male | Female | % |
| Dachshund | 123 | 234 | 17.6 |
| Terrier | 456 | 567 | 31.1 |
| Siberian Husky ^a | 789 | 891 | 51.3 |
| Totals (N = 3060) | 1368 | 1692 | |
| <i>Note.</i> Average score = 150. No animals were harmed during testing. | | | |
| ^a Three huskies (one male, two female) escaped before testing was completed and are therefore not included in the table | | | |

Figure 9. Table example (Source: <https://owl.english.purdue.edu/owl/resource/560/19/>)

The application of figures in pdf files is emphasized not only to break the continuity of the monotony of written lines figures, but also to provide useful methods of deepening the understanding procedure. There are several applicable figures, such as graphs, charts or photos. By now, it is needless to say that the first criterion when preparing a figure is copyright issues. Make sure that if you use someone's item you refer to the name of the author and locate the origin of the learning objectives. Apart from copyright issues, readability also has a key importance. The material should not be overcomplicated – a figure must talk for itself. The height of figures must not exceed the top and the bottom margins. The text forms in a figure must be in a readable font, the best approach is to use Arial font. The font size is between eight and fourteen point, depending on the density of the information. "For figures,

make sure to include the figure number and a title with a legend and caption. These elements should appear below the visual display". (<https://owl.english.purdue.edu/owl/resource/560/20/>) For the first figure number, type Figure 1 and type the title of the figure following the title with a note explaining the symbols in the figure:

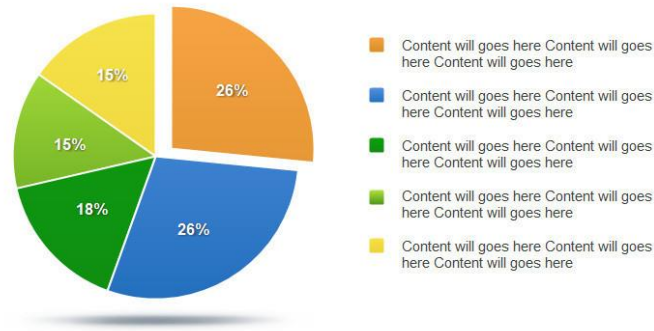


Figure 10. Figure example (<https://owl.english.purdue.edu/owl/resource/560/20/>)

5.4 General guidelines – references

At the end of the each learning material (pdf files), 'References' section should be added.

All pdf files regulations intend to follow APA-style. For further information, please read:

<https://owl.english.purdue.edu/owl/section/2/>

5.5 Uploading pdf files

Go to the Moodle site and in the topic section the editing teacher should select 'Add an activity or resource' and select/add File type.

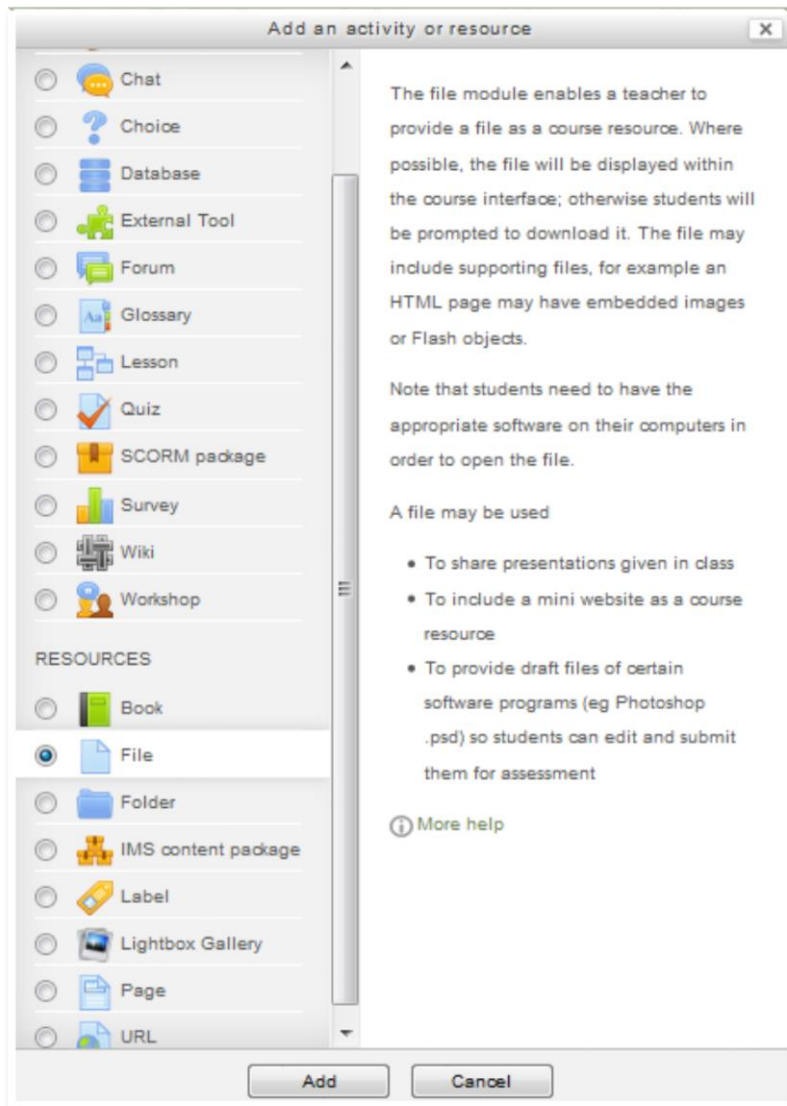


Figure 11.Upload pdf file (part 1)

The next step is to provide the name and the description of the document. As it is done select the file you want upload (Figure 12) then click on 'Save and return to course' option.

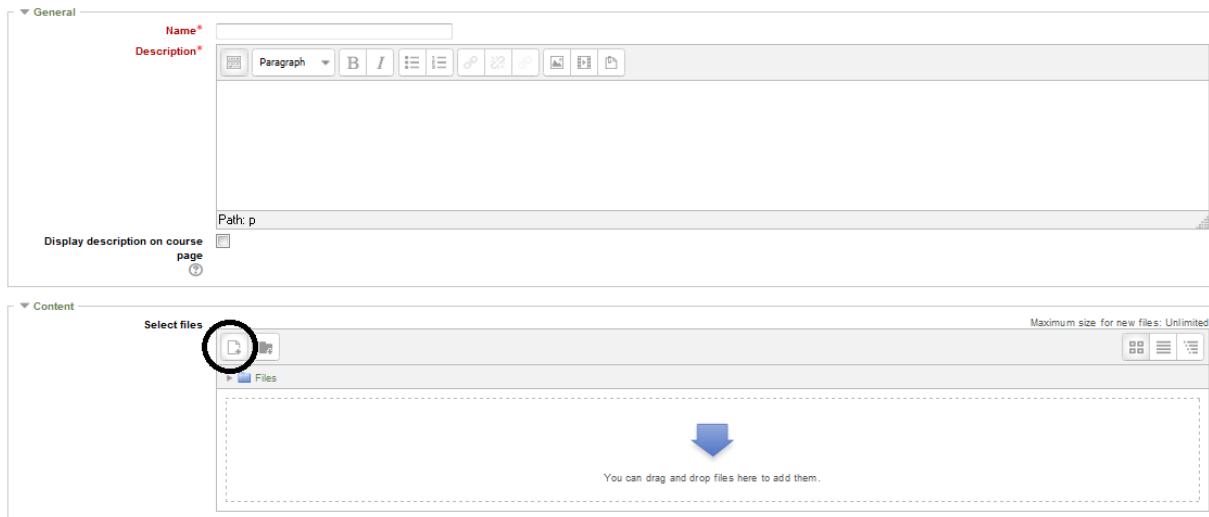


Figure 12. Upload pdf file (part 2)

6. Task 3 – Forums and chats

6.1 Forums

Forums are an excellent way of exchanging ideas between the course participants. While most of the learning materials are stable and usually follow the one-way information pattern (from instructor to learners), forums give chance to every course participant to make their voice heard. These contributions can be simple comments, raising questions, sharing ideas, provoking thoughts, proposing debates... etc. In Moodle, several forums can be run parallel to each other – of course – with different topic titles. Usually, it is the task of the instructor to create forums but expressing ideas can only occur in threads. Each forum may contain a great number of threads. With adequate setting it is also possible to receive an e-mail notification on the arrival of a post, thus a possible answer may arrive much sooner. This makes the whole conversation 'live'. There are five forum types:

- **a single simple discussion** - a single discussion topic, which everyone can reply to (cannot be used with separate groups)
- **each person posts one discussion** - each student can post exactly one new discussion topic, which everyone can then reply to

- **Questions and Answers forum** - students must first post their perspectives before viewing other students' posts
- **standard forum displayed in a blog-like format**—it is an open forum where anyone can start a new discussion at any time, and in which discussion topics are displayed on one page with '*Discuss this topic*' links
- **standard forum for general use** - an open forum where anyone can start a new discussion at any time

A great advantage of the forum activity is that participants have the chance to express their opinions on the particular discussion topic. Furthermore, their shared ideas may be available until the end of the course for all course participants that is their thoughts in written format remains whether the poster is online or offline. Its disadvantage is that consecutive messages in a given discussion may follow each other with long chronological pauses.

Teachers of each Moodle courses (and modules) are kindly warned to avoid opening too many forums as it may ruin the course transparency. As far as the forum types are concerned, we advise to use the last one from the list, **standard forum for general use**.

6.2 Creating forums

When an editing teacher intends to create a forum in a Moodle course, they should click on '*Add an activity or resource*'. From the pop-up window '*Forum*' icon should be chosen. Then click on '*Add*' at the bottom of the pop-up window.

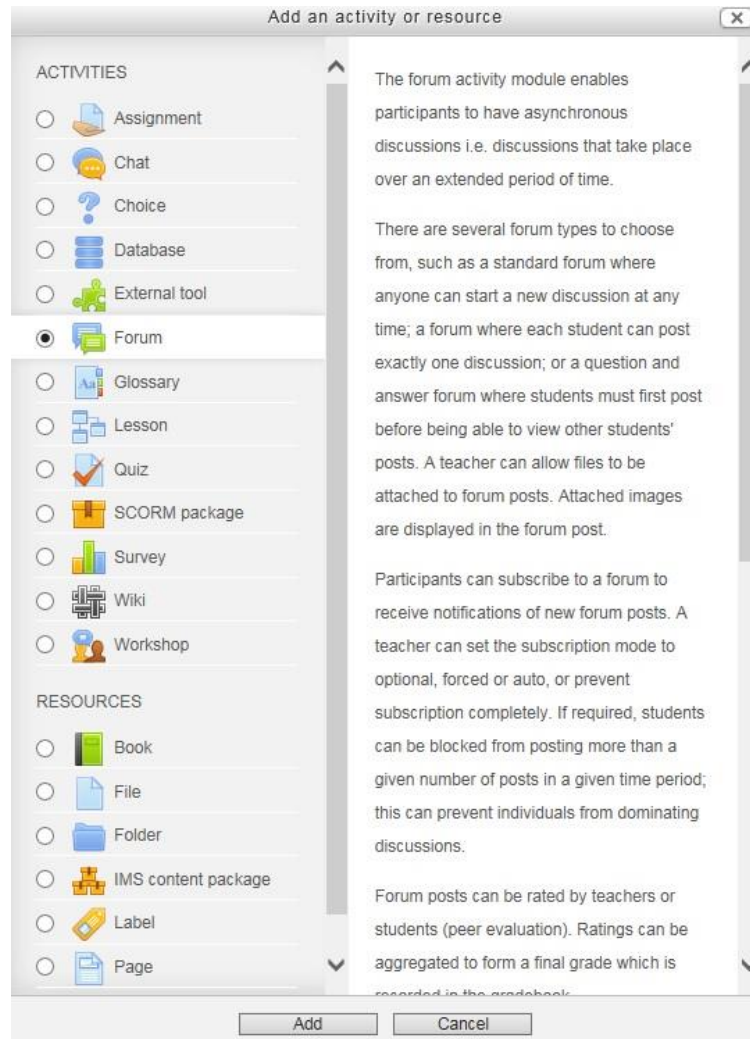


Figure 13. Creating a Forum (part 1)

With only two compulsory items (forum name, description) we can continue the method of creating forums. The forum type should remain *'Standard forum for general use'*. There are further settings (word count, tracking, blocking) that should be adjusted by the expectations of the editing teacher.

To finish the creation of forum *'Save and return to course'* should be clicked on. By clicking on the *'Add new discussion topic'* one can give a subtopic.

All comments posted in forums are awaited for 30 minutes before they become publicly open. During these minutes, the poster has the chance to make changes.

▼ General

Forum name*

Description*

Path:

Display description on course page

Forum type

Figure 14. Creating a Forum (part 2)

6.3 Chats

The chat activity is an outstanding Moodle phenomenon when course participants are online. Participants are to join the same ‘Chatroom’ and they can reach each other with text-based, real-time synchronous discussions. When the chatroom is closed all threads disappear unless it is forbidden by the editing teacher’s settings. Chat is a marvellous tool for discussing a topic online when there is no possibility for face-to-face communication because of e.g. geographical barriers.

6.4 Creating chats

When an editing teacher intends to open a chat in a Moodle course for the participants present, they should click on ‘Add an activity or resource’. From the pop-up window ‘Chat’ icon should be chosen. Then click on ‘Add’ at the bottom of the pop-up window.

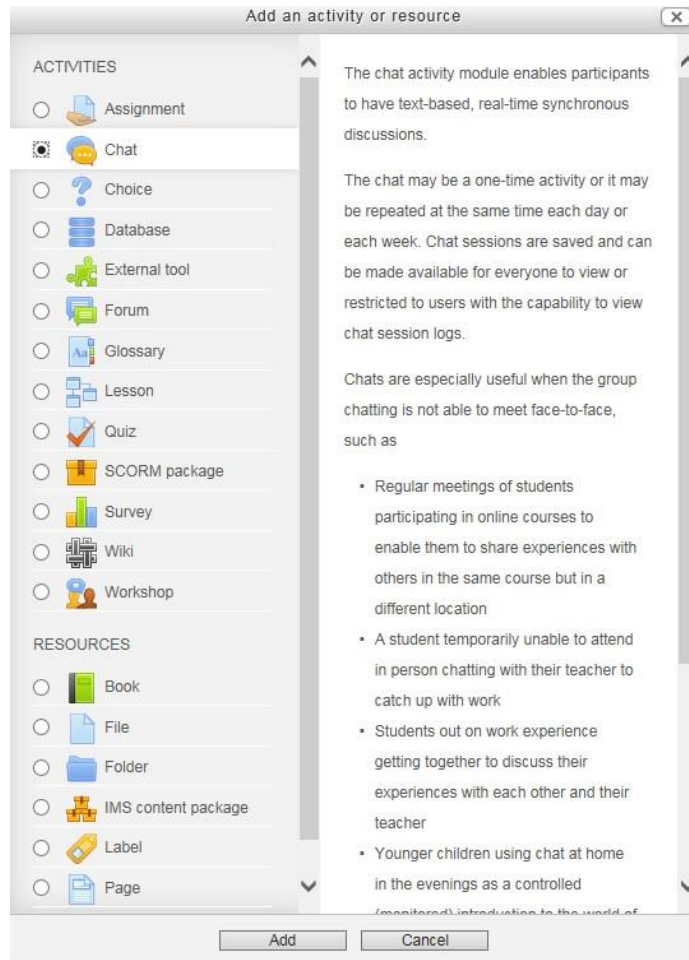


Figure 15. Creating a Chat (part 1)

By clicking on 'Chat' we are just to give 'Name of this chat room' and its 'Description' e.g.:

▼ General

Name of this chat room* Brainstorming on the advantages of renewable practices

Description*

Paragraph B I [List icons]

Folks! Try to provide some advantages of renewable energy forms and explain!

Path: p

Display description on course page

► Chat sessions

► Common module settings

Save and return to course Save and display Cancel

Figure 16. Creating a Chat (part 2)

Remember to click on *'Save and return to course'*.

7. Task 4 – How to manage student assignment: case study

7.1 Student assignments

Each student participating in renewable energy courses is to accomplish three kinds of exercise. They are to solve quizzes (1), to take active participation in forum discussions (2) and to write a case study (3) based on the instructions of the teacher.

A Moodle activity called *'Assignment'* gives the possibility of handling case studies written by course members. Assignment activity module permits a teacher to communicate responsibilities, collect work and provide grades and feedback. Students can submit any digital content, such as word-processed documents, spreadsheets, images, or audio and video clips. When reviewing assignments, teachers can and have to leave feedback comments and upload files, such as marked-up student submissions, documents with comments or even spoken audio feedback.

7.2 Creating assignments (for students to hand in their written product)

To create a possibility for students to submit their accomplished written task (case study) teachers are to use the *'Assignment'* activity. Click on *'Add an activity or resource'* and choose Assignment icon then set the *'Name'* and *'Description'* compulsory records. The editing teacher can also set obligatory options e.g. availability. Remember to click on *'Save and return to course'*.

The steps and possibilities are the following:

- *Allow submission from:* If enabled, students will not be able to submit before this date. If disabled, students will be able to start submitting right away.
- *Due date:* This is when the assignment is due. Submissions will still be allowed after this date but any assignments submitted after this date is marked as late. To prevent submissions after a certain date - set the assignment cut-off date.

- *Cut-off date*: If set, the assignment will not accept submissions after this date without an extension.
- *Online text*: If enabled, students are able to type rich text directly into an editor field for their submission.
- *File submissions*: If enabled, students are able to upload one or more files as their submission.

For the middle revision teachers can create an 'Assignment' activity named 'Upload your case study for middle revision' and another for the final one.

Any teacher can revise, and comment the documents.

General

Name*

Description*

Paragraph **B** **I** [List] [List] [Link] [Image] [Video] [File]

Deadline: 15/05/2016

Path: p

Display description on course page

Availability

Allow submissions from Enable

Due date Enable

Cut-off date Enable

Always show description

Submission types

Submission types Online text File submissions

Maximum number of uploaded files

Maximum submission size

Figure 17. Creating an Assignment (part 1)

The teachers cannot assign case studies to students, but students can save their titles in assignments without submitting the file, so teachers can see every title assigned to the students, and can see if the students submit their files (can revise even when the students just saved it and not submitted, so there is an opportunity of pre-revising).

Please upload your Case study

Grading action: Choose...

| re | First name / Surname | Email address | Status | Grade | Edit | Last modified (submission) | Online text | File submissions | Submission comments | Last modified (grade) | Final grade |
|----|----------------------|-------------------------|---------------------------------|----------------|------|--------------------------------------|---------------------|------------------|---|--------------------------------------|----------------|
| | Zoltán Bujdosó | zbujdos@karolyrobert.hu | No submission | - | | - | | | | - | - |
| | Benjámín Korcz | korcz.beni93@gmail.com | No submission | - | | - | | | | - | - |
| | Test Elek | test@elek.hu | Submitted for grading Graded | 85.00 / 100.00 | | Wednesday, 17 February 2016, 2:16 PM | This is MY document | logo2.png | Comments (0) Add a comment... Save comment Cancel | Wednesday, 17 February 2016, 2:17 PM | 85.00 / 100.00 |

With selected... Lock submissions Go

Options

Assignments per page: 10

Filter: No filter

Quick grading:

Show only active enrolments:

Figure 18. Creating an Assignment (part 2)

8. Task 5 – Quizzes

Quizzes are crucial parts of the learning material. At end of each chapter of each module of the two online courses, there will be a quiz with 20 questions. The Moodle quiz system will randomly choose five questions and students reach pass-level if they achieve 60% or higher. In the followings, readers will get familiar with the creation and uploading of quizzes.

8.1 Creating quizzes

The applied methods of delivering the learning material to students are always crucial as they strongly determine and forecast the possible students' comprehension outcome. Each chapter is supposed to be finished with an online quiz. Feedback on students' performance is a critical part of a learning environment, and assessment is one of the most important activities in education. As editing teachers (we are the ones who provide the learning material), we will be able to track what is going on inside students' heads and at the end of each lesson, students are to demonstrate what they have understood and what they have not. The first form of

feedback is done during the learning process in the interactive lesson forms but a more comprehensive form of control/monitor is also required. This takes place at the end of each chapter. Moodle has developed a complex set of quiz module. The Moodle community has added a large number of options and possibilities to the quiz engine, making it exceptionally flexible. When creating a quiz in Moodle, one has to understand the two basic components of this process. First is the **quiz body** that determines what the students see when they take an assessment. Furthermore, in a quiz body the question types can be chosen (manually or at random). The second is the **question pool**: here the editing teacher creates the actual questions and has the possibility to organize them according to his/her own scheme. Question pools can be reused in multiple quizzes that is a set of questions can be also used again in the final test of a whole course.

Activity for teachers to do:

1. Choosing the proper type of questions that will be used in the test (see **Annex 2**)
creating the questions
2. When a question set is ready, it has to be uploaded.

| | the question | good answer | wrong answer | wrong answer | wrong answer |
|----|--------------|-------------|--------------|--------------|--------------|
| 1. | 2+2= | 4 | 3 | 5 | -3 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |

Figure 19. Excel sample for creating a quiz (Annex 2)

Let us see an example how it works when e.g. a ‘multiple choice question’ type is chosen.

In case of multiple questions, the Moodle structure gives chance to shuffle questions and shuffle the answers within the question when the test is on. In this case, it randomly orders the parts making up quiz question.

Choose the relevant type from the samples entitled: quiz _samples.doc (see **Annex 2**)

Make sure that each test database (at the end of each chapter) should contain altogether 20 questions. The Moodle quiz system will randomly choose five questions and students reach pass-level if they achieve 60% or higher.

In Moodle there is an option on the Quiz editing page for ‘Add random question from category’, where you can give the number of random questions.

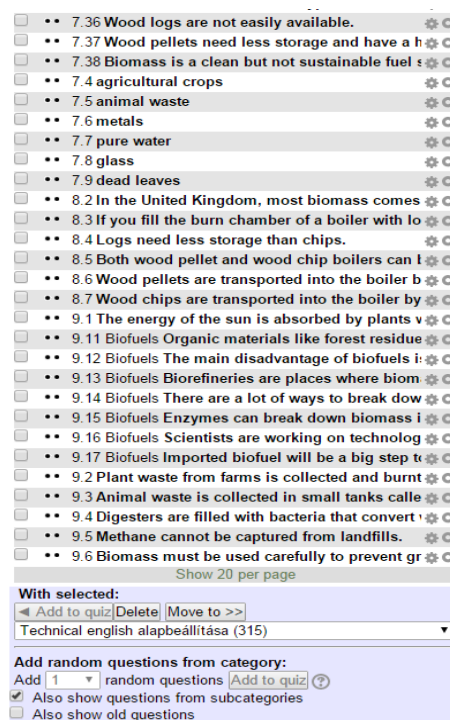


Figure 20. Creating quizzes (part 1)

Teachers can set the conditions for access in every quiz in the field called ‘Restrict access’. You can set the term of access, the grade conditions (at least..., less than...).

▼ Restrict access

Allow access from February 2016 Enable

Allow access until February 2016 Enable

Grade condition must be at least % and less than %

User field contains

While access is prevented

Figure 21. Creating quizzes (part 2)

8.2 Uploading quizzes

Go to the Moodle site and in topic section the editing teacher should select 'Add an activity or resource', and select/add 'Quiz' type.

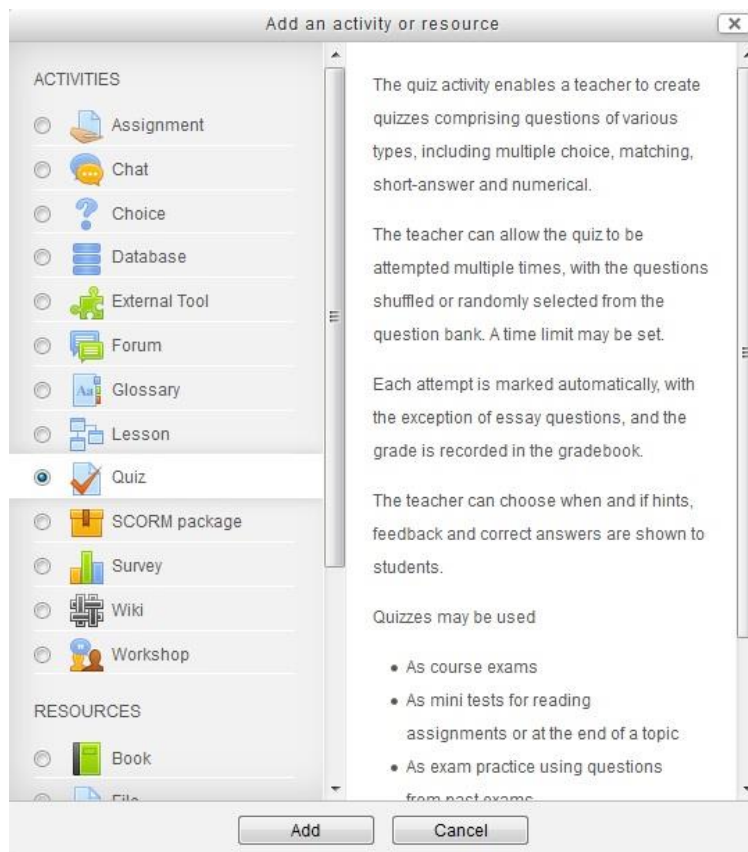


Figure 22. Uploading quizzes (part 1)

The following settings 'Adding a new quiz' appear (which can be modified later in the Edit settings as the link of the Quiz Administration). By clicking on 'Expand all' further settings can be achieved that later play more or less significant role in the practical utilisation of the quiz.

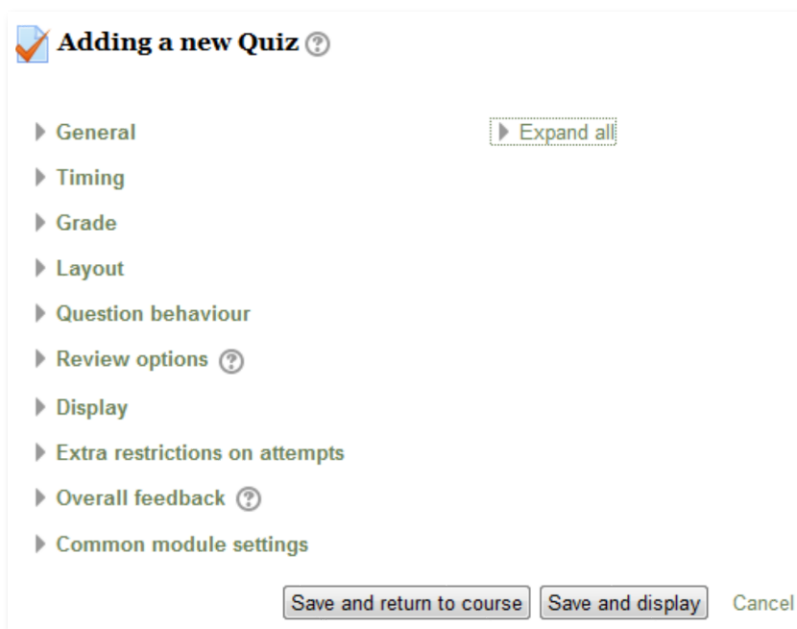


Figure 23. Uploading quizzes (part 2)

In **General** the 'Name' quiz simply creates a link to quiz, students will see on course page. With the 'Description' menu, further information can be given like "Answer the questions then click submit all and finish".

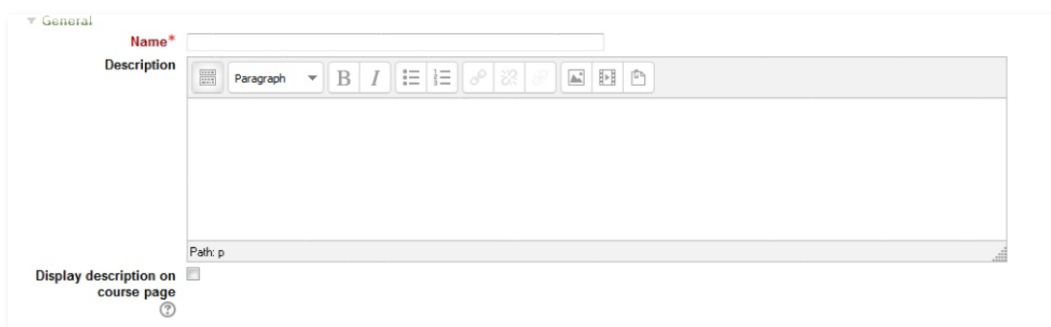
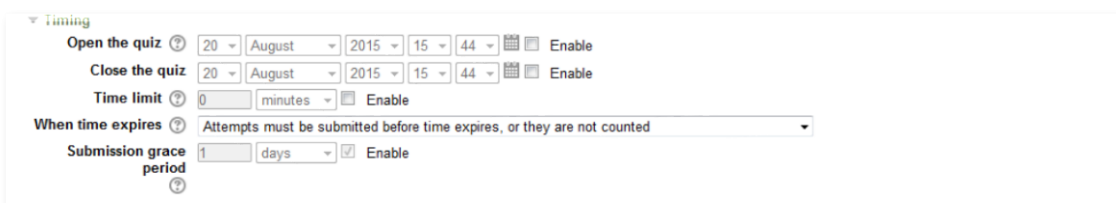


Figure 24. Uploading quizzes (part 3)

In **Timing**, the editing teacher can set the opening and closing date of the quiz with the countdown timer (if ticked). The 'When time expires' button controls what happens if the students fails to submit their quiz attempt before time expires. If the students are actively working on the quiz at that time, the countdown timer will always automatically submit the attempt for them, but if they have logged out, this setting controls what happens. We strongly ask our teachers to avoid using **Timing** as we do not intend to force students to provide quick answers, but we want our students to give answers by mature thinking.



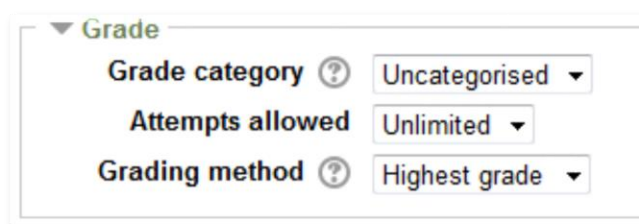
The screenshot shows the 'Timing' section of a quiz editor. It contains the following settings:

- Open the quiz:** 20 August 2015 15:44 (calendar icon) [Enable]
- Close the quiz:** 20 August 2015 15:44 (calendar icon) [Enable]
- Time limit:** 0 minutes [Enable]
- When time expires:** Attempts must be submitted before time expires, or they are not counted
- Submission grace period:** 1 days [Enable]

Figure 25. Uploading quizzes (part 4)

In **Grading** section, the editor teacher can set the number of students' attempts that is if the test happens to be an exam it is useful to set the number of attempts to one. If it is a practice test and multiple attempts are allowed, the following methods are available for calculating the final quiz grade:

- Highest grade of all attempts
- Average (mean) grade of all attempts
- First attempt (all other attempts are ignored)
- Last attempt (all other attempts are ignored)



The screenshot shows the 'Grade' section of a quiz editor. It contains the following settings:

- Grade category:** Uncategorized
- Attempts allowed:** Unlimited
- Grading method:** Highest grade

Figure 26. Uploading quizzes (part 5)

In **Grading**, we advise the editing teacher to use 'Unlimited' number of attempts and 'Highest grade' as for grading method. Our aim is to persuade the participating students to read the

uploaded pdf files several times to obtain more and more knowledge. With unlimited number and highest-grade settings, we encourage the future students to achieve better results.

Layout section determines the order of questions (as shown on the edit screen or shuffled randomly). For longer quizzes, it makes sense to stretch the quiz over several pages by limiting the number of questions per page. When adding questions to the quiz, page breaks will automatically be inserted according to this setting. However, page breaks may later be moved manually on the editing page. As for Layout, editing teachers should use *'Every question new page'*. This way the importance of each question should be highlighted.

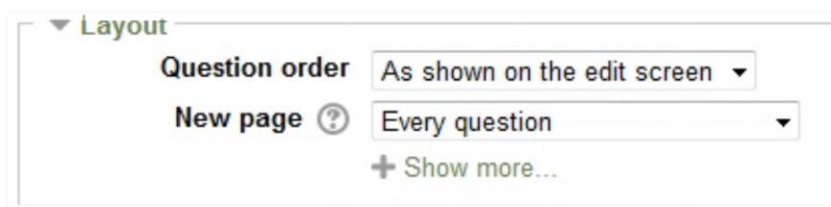


Figure 27. Uploading quizzes (part 6)

Question behaviour is concerned with the placement of the questions and with feedback allowances.

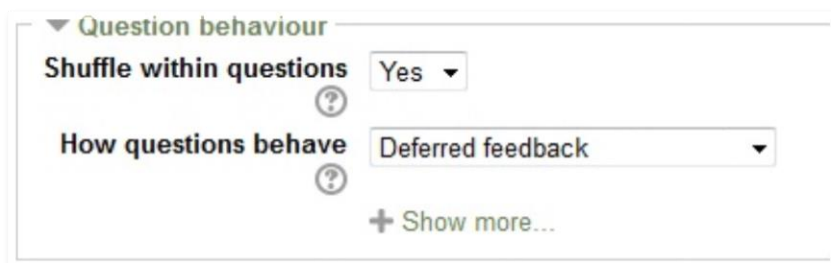


Figure 28. Uploading quizzes (part 7)

How questions behave:

- Deferred feedback - Students must enter an answer to each question and then submit the entire quiz, before anything is graded, or they get any feedback.
- Adaptive mode and Adaptive mode (no penalties) - Allows students to have multiple attempts at the question before moving on to the next question. This behaviour

requires that the *'Whether correct'* box is ticked under *'During the attempt'* in the *'Review options'* section, at a minimum.

- Interactive mode - After submitting one answer, and reading the feedback, the student has to click a *'Try again'* button before they can try a new response. Once the student has the question right, they can no longer change their response. Once the student has the question wrong too many times, they are just graded wrong (or partially correct), are shown the feedback, and can no longer change their answer. There can be different feedback after each try the student makes. The number of possible tries is governed by the *'Hints'* subsection of the *'Multiple tries'* section of each item's settings. The number of possible tries is the number of hints, plus one.
- Immediate feedback - Similar to interactive mode in that the student can submit their response immediately during the quiz attempt, and get it graded. However, they can only submit one response and they cannot change it later.
- Deferred feedback or Immediate feedback with Certainty-based marking (CBM) - With CBM, the student does not only answer the question, but they also indicate how sure they are they got the question right. The grading is adjusted by the choice of certainty, so that students have to reflect honestly on their own level of knowledge in order to get the best mark. See the See Also section below for an example quiz using CBM and a blog post explaining the philosophy.

To ensure the usage of same type of feedback for all teachers, please use Adaptive mode (no penalties) by default.

Review options control what information students can see when they review a quiz attempt or look at the quiz reports.

| Review options | During the attempt | Immediately after the attempt | Later, while the quiz is still open | After the quiz is closed |
|---|---|---|---|---|
| <input checked="" type="checkbox"/> The attempt | <input checked="" type="checkbox"/> The attempt | <input checked="" type="checkbox"/> The attempt | <input checked="" type="checkbox"/> The attempt | <input checked="" type="checkbox"/> The attempt |
| <input type="checkbox"/> Whether correct | <input checked="" type="checkbox"/> Whether correct | <input checked="" type="checkbox"/> Whether correct | <input checked="" type="checkbox"/> Whether correct | <input checked="" type="checkbox"/> Whether correct |
| <input type="checkbox"/> Marks | <input checked="" type="checkbox"/> Marks | <input checked="" type="checkbox"/> Marks | <input checked="" type="checkbox"/> Marks | <input checked="" type="checkbox"/> Marks |
| <input type="checkbox"/> Specific feedback | <input checked="" type="checkbox"/> Specific feedback | <input checked="" type="checkbox"/> Specific feedback | <input checked="" type="checkbox"/> Specific feedback | <input checked="" type="checkbox"/> Specific feedback |
| <input type="checkbox"/> General feedback | <input checked="" type="checkbox"/> General feedback | <input checked="" type="checkbox"/> General feedback | <input checked="" type="checkbox"/> General feedback | <input checked="" type="checkbox"/> General feedback |
| <input type="checkbox"/> Right answer | <input type="checkbox"/> Right answer | <input type="checkbox"/> Right answer | <input type="checkbox"/> Right answer | <input type="checkbox"/> Right answer |
| <input type="checkbox"/> Overall feedback | <input checked="" type="checkbox"/> Overall feedback | <input checked="" type="checkbox"/> Overall feedback | <input checked="" type="checkbox"/> Overall feedback | <input checked="" type="checkbox"/> Overall feedback |

Figure 29. Uploading quizzes (part 8)

- **During the attempt** settings are only relevant for some behaviours, like 'interactive with multiple tries', which may display feedback during the attempt.
- **Immediately after the attempt** settings apply for the first two minutes after 'Submit all and finish' is clicked.
- **Later, while the quiz is still open** settings apply after this, and before the quiz close date.
- **After the quiz is closed**, settings apply after the quiz close date has passed. If the quiz does not have a close date, this state is never reached.

What is the suggested setting pattern from these possibilities? Our aim is that the students should use their acquired knowledge while doing the quizzes. We should avoid quizzes that give feedback on the given answer while the quiz is still open. So please follow the instructions: in 'Review options' editing teachers should use ticks only for the second, third and fourth columns (immediately after the attempt; later, while the quiz is still open; after the quiz is closed)

Display determines how many digits will be shown after the decimal point when the grade is displayed. A setting of 0 for example means that the grades are displayed as integers. This setting is only used for the display of grades, not for the display or marking of answers.

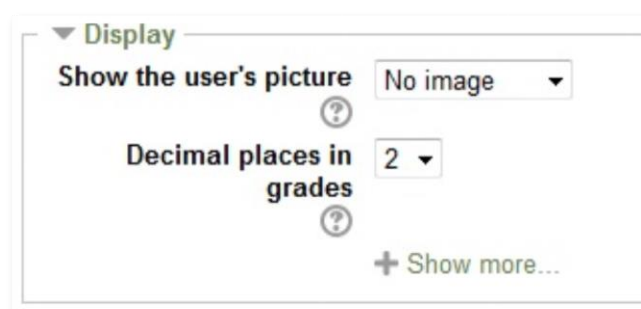


Figure 30. Uploading quizzes (part 9)

The overall feedback is shown to a student after they have completed an attempt at the quiz. The text that is shown can depend on the grade the student got. Click 'Show editing tools' to display the rich text editor, and drag the bottom right of the text box out to expand it.

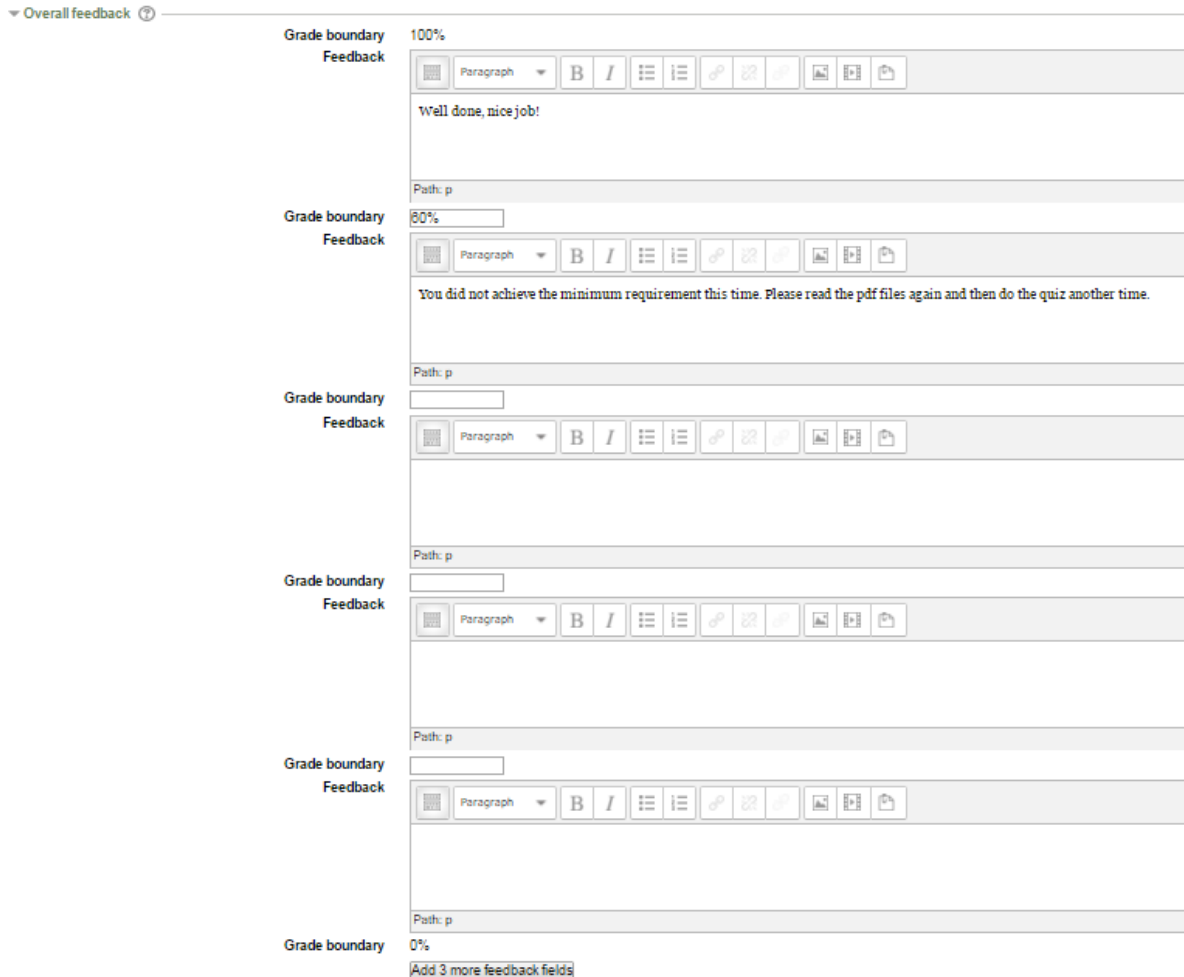


Figure 31. Uploading quizzes (part 10)

On overall feedback of quizzes: students who score between 100% and 60% will see the 'Well done, nice job' message, and those who score between 59.99% and 0% will see 'You did not achieve the minimum requirement this time. Please, read the pdf files again and then do the quiz another time'.

The editing page should follow this structure (Figure 31):

- Grade boundary: 100%
- Feedback: 'Well done, nice job!'

- Grade boundary: 60%
- Feedback: *'You did not achieve the minimum requirement this time. Please read the pdf files again and then do the quiz another time'*
- Grade boundary: 0%

Please, remember to close down the page with clicking *'Save and display'* button at the bottom of the page.

9. Task 6 – Extra – additional resources

The sixth chapter of all the modules in the “Renewable energy for local development” course contains free, optional learning material. All extra material (e.g. set of pictures, videos, links) should be placed here. It will also contain the videos recorded in the multiplier events (English presentation and short English video (5 min)). Interactive lesson is only explained just in case someone wants to use it as an extra. Photo gallery is also a possible section in Chapter 6 of each module. Photos to be uploaded by teachers and students with a minimum info (location, year, details of installation). Bibliography for additional learning material section is also required.

How to upload a video file?

As an early step, please upload video files to www.youtube.com, then you can embed them into the quiz or anywhere. As an additional resource, teachers can add activity named *'Media collection'* with the description of media.

'Gallery default' can also be created and managed an own gallery. Here you can define the type of your gallery (image, video, audio), the availability and other details.

Please do not forget to save your work at all times.

Media collection name* ?

Description

Paragraph **B** *I*

U ~~S~~ X₂ X²

Font family Font size

Path: p

Display description on course page

Maximum size per item

Maximum number of items per gallery

Maximum number of galleries per user/group

Allow comments

Allow likes

▼ Display list

Thumbnails per page

Thumbnails per row

Display full caption text

Caption position

▼ Gallery defaults

Gallery types* ? Image Video Audio

Gallery view options* ? Carousel Grid view

Columns in grid view

Rows in grid view

Enforce gallery defaults

▼ Availability

Read only from Enable

Read only to Enable

To restrict the dates this activity is available between, use the Restrict access section below.

▼ Common module settings

Visible

ID number ?

Group mode ?

Grouping ?

▶ Restrict access

[Save and return to course](#) [Save and display](#) [Cancel](#)

Figure 32. Adding a media collection in Moodle

Most of the learning material is usually delivered to students through non-interactive learning units in our cases these are pdf files. These pdf files are followed by quizzes that monitor and measure students' progress. There are several more ways for delivering learning material to students, e.g. interactive lesson forms. In case of these educational units require more time and energy to create; thus, this part is an optional part. We suggest reading the following subchapter only for those who intend to create extra learning material called '*Interactive lessons*'.

9.1 Extra – creating and uploading interactive lesson

The method of delivering the learning material to students is always crucial. There are several ways to accomplish this task but in our case (teaching about renewable energy resources), one of the best ways is to do it by interactive lesson forms. In what way does it differ from unprinted, online pdf files? The key answer is interactivity. While in traditional education if a student is given a printed 3-page-long pdf document or an Internet link with a reading activity in html form, the instructor must always prepare/add/ask a list of questions to check if understanding (message convey) is occurred. This is unnecessary when interactive lesson forms are applied. The essence of interactivity is that students are allowed to pass to the next learning unit if s/he provides acceptable answer to the question that is followed by the learning unit. In case of wrong answer, the student is redirected to the page where the good answer is hidden among the lines. When creating such exercise the editing teacher must pay attention to the length of the learning material. The generally accepted method is that “one idea – one slide”. In practice, it means that a page-long learning material is divided into 3 small learning units. It means that a 120-page-long text material serves approximately 360 lesson units. After every third lesson page, a question should be placed to check understanding. Here comes an example to demonstrate the above-mentioned facts:

| | |
|--|----------------------------------|
| 1. | |
| alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater information 1 alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater | |
| 2. | |
| alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater information 2 > information 3 alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater information 4 > information 5 alma mater alma mater alma mater | |
| 3.Q1 | |
| A true false question (right answer: true) | |
| in case of good answer: go to 4 | in case of wrong answer: go to 1 |
| 4.Q2 | |
| A matching question (right pairing: 2;3 and 4;5) | |
| In case of good answer: go to 5 | in case of wrong answer: go to 2 |
| 5. | |
| alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater alma mater | |

Figure 33. Example of an interactive lesson

What kind of questions may an editing teacher add? Moodle provides a wide range of questions: e.g. multiple choices, calculated, matching, true-false.

This arrangement of learning material also gives possibility to student assessment for the teacher as each student provided answer can be scored (good answer 1 point, wrong answer -0.1 point). At the end of each chapter, participants of the course receive information on personal accomplishment.

It is suggested, that the vast majority of total learning material (~70%) should be created in interactive lesson forms. Summary: lessons are ways of providing content while also assessing students through questions. A typical feature of the lesson activity is that lessons may or may not be graded, navigation may be linear or you may design a branching structure that depends on either student's responses to questions or navigation choices. There is a setting menu in

Moodle where an editing teacher may set the option how many times students may navigate through the lesson and/or respond to the questions.

Activity for teachers to do:

1. all learning material (all chapters) must be divided into small learning units and must be placed in the enclosed word doc file
2. creating interactive lesson forms entries

(1) Detailed information is enclosed in the relevant sample entitled: interactive_lesson_sample.doc (**Annex 4**)

(2) Go to the Moodle site and in topic section the editing teacher should select 'Add an activity or resource' and select lesson type.

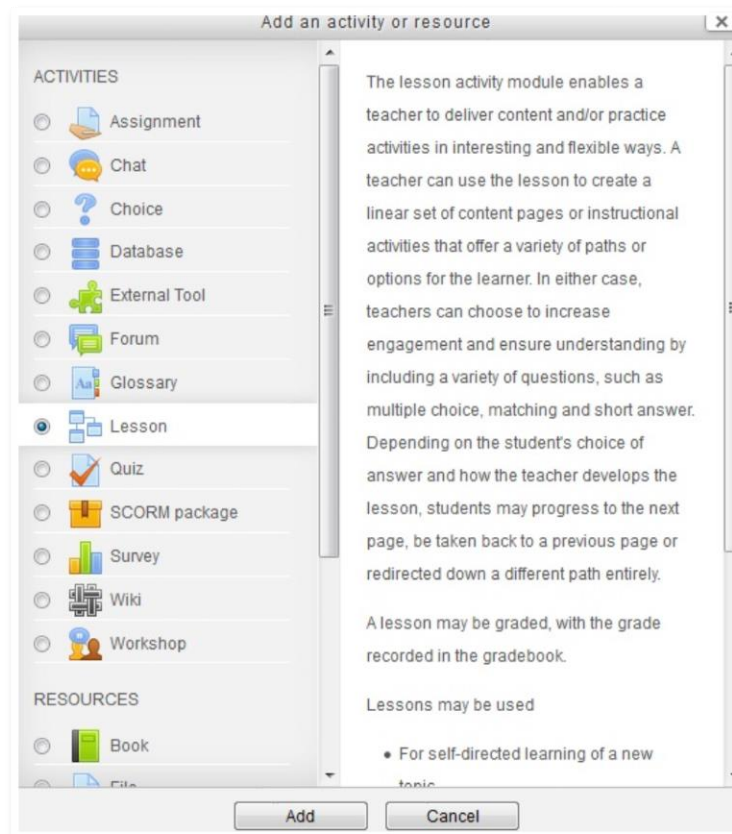
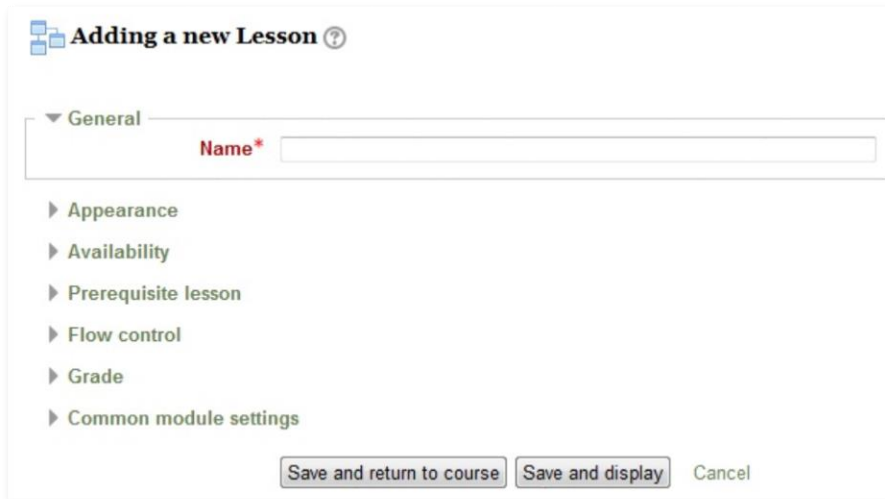


Figure 34. Creating an interactive lesson (part 1)

The next task as an editing teacher, we have to name our lesson, and decide what restrictions we want.



Adding a new Lesson ?

▼ General

Name*

▶ Appearance

▶ Availability

▶ Prerequisite lesson

▶ Flow control

▶ Grade

▶ Common module settings

Save and return to course Save and display Cancel

Figure 35. Creating an interactive lesson (part 2)

Appearance: it gives possibility to set e.g. progress bar whether students should see their score as they go through the lesson.



Appearance

File pop-up ?

Maximum size for new files: Unlimited, maximum attachments: 1

Files

You can drag and drop files here to add them.

Progress bar ? No

Display ongoing score ? No

Display left menu ? No

Minimum grade to display menu ? 0%

Slideshow ? No

Maximum number of answers ? 4

Use default feedback ? No

Link to next activity ? None

Figure 36. Creating an interactive lesson (part 3)

Availability: the starting and the closing dates can be set; the editing teacher may also give password to the lesson.

The screenshot shows the 'Availability' settings panel. It includes the following fields and options:

- Available from:** A date selector with dropdowns for day (1), month (September), and year (2015), followed by a time selector (16:40) and an 'Enable' checkbox.
- Deadline:** A date selector with dropdowns for day (31), month (January), and year (2016), followed by a time selector (16:40) and an 'Enable' checkbox.
- Time limit (minutes):** A text input field containing '20' and an 'Enable' checkbox.
- Password protected lesson:** A dropdown menu set to 'No'.
- Password:** A text input field with an 'Unmask' checkbox.

Figure 37. Creating an interactive lesson (part 4)

Prerequisite lesson: this part is a real student-teasing setting. The editing teacher may determine how much time a student should spend with this lesson. If it is not completed students may not carry on with the next lesson unit. Furthermore, the editing teacher may also set a minimum grade (in %) as a pass level.

The screenshot shows the 'Prerequisite lesson' settings panel. It includes the following fields and options:

- Dependent on:** A dropdown menu set to 'None'.
- Time spent (minutes):** A text input field containing '0'.
- Completed:** An unchecked checkbox.
- Grade better than (%):** A text input field containing '0'.

Figure 38. Creating an interactive lesson (part 5)

Flow control: the editing person may set the number of attempts, may decide whether the student should or should not see her/his result.

The screenshot shows the 'Flow control' settings panel. It includes the following fields and options:

- Allow student review:** A dropdown menu set to 'No'.
- Provide option to try a question again:** A dropdown menu set to 'No'.
- Maximum number of attempts:** A dropdown menu set to '1'.
- Action after correct answer:** A dropdown menu set to 'Normal - follow lesson path'.
- Number of pages to show:** A dropdown menu set to '0'.

Figure 39. Creating an interactive lesson (part 6)

Grade: as far as evaluation is concerned, this part is regarded the most significant. Here the editor can set the grade category; practice form (if this is set, the result is not shown in the final). As the renewable energy project is introductory phase (students pass or fail based on regular activity), it is strongly advised not to set strict pass level or criterion.

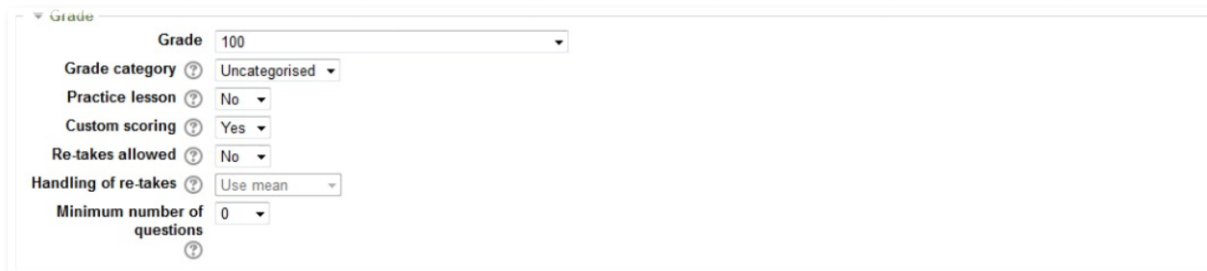


Figure 40. Creating an interactive lesson (part 7)

Common module settings: Setting an ID number provides a way of identifying the activity for grade calculation purposes. If the activity is not included in any grade calculation then the ID number field may be left blank.

The ID number can also be set in the gradebook, though it can only be edited on the activity settings page.



Figure 41. Creating an interactive lesson (part 8)

Clicking 'Save and display' button the (empty) lesson is ready. It is time to produce the first 'Content page' followed by a 'Question page'. When the editor created the empty lesson, the following table appears:

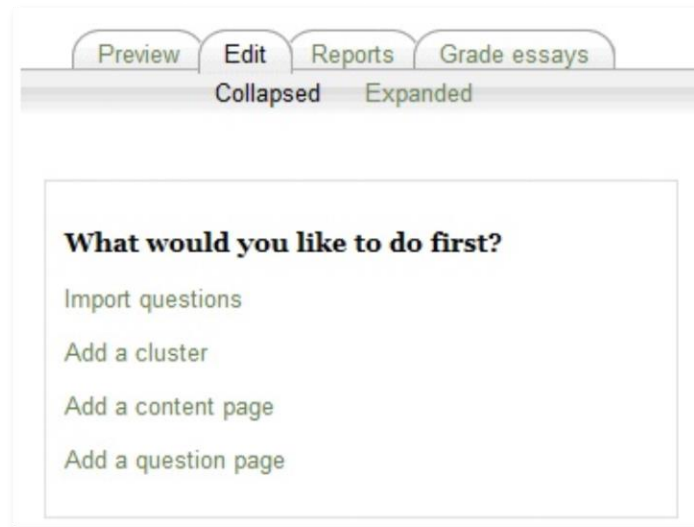


Figure 42. Creating an interactive lesson (part 9)

There are several types of pages: cluster (links certain pages with certain questions, so that they always are grouped together); content page (use the content page when you want to create a table of contents with links or a navigation choice for students); question page - use the question page to add content to your lesson ending with a question.

Clicking *'Add a content page'*, the editor is allowed to copy the content (small learning material unit) and has to set the navigation. Unfortunately, the present Moodle settings refer to this as content_1; content_2; and so on. It has nothing to do with learning content but they are strongly associated with the button content. The editor teacher may give several buttons and thus the student is able to jump to the next slide. Clicking *'Save page'* the editor has created the first content page. Let us suppose we have a very important piece of information that we really want our students to remember. Therefore, a question page can follow the content page (if one button at content page was jumping to the question page). Clicking *'Question'* the editor may select a question type from the following list: essay, matching, multi-choice, numerical, short answer, true/false. Selecting one question type, the editing teacher should go on with clicking *'Add a question page'*. Providing the question and its possible answers the editor directs students to different pages based on their answer. If scoring is set (when

creating the lesson) at the end of the lesson, the students will get a personal score. If scoring is not set, students receive a 'completed' badge and may carry on with the next lesson.

Another important issue is the length of a lesson. Educators often fall into a trap by creating very long lessons (by adding too many content pages or giving high-required time). Teachers should involve as much learning material as can be read in 30 minutes. Another 30 minutes are spent on memorizing the page contents. In addition, our goal is to achieve high student accomplishment.

Teachers of this project should avoid funny accidents such as that shown in Figure 43.

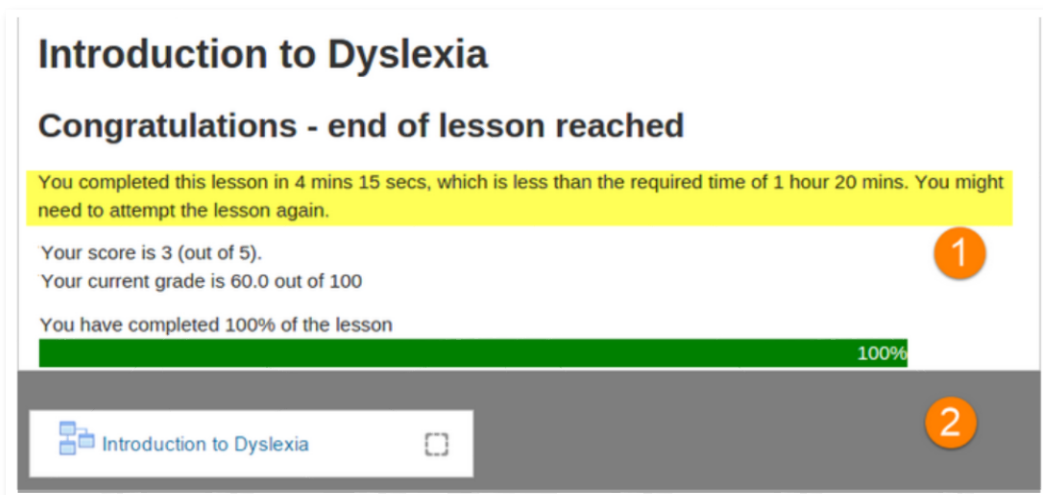


Figure 43. Creating an interactive lesson (part 10) (Source: <https://moodle.org/mod/forum/discuss.php?d=310357>)

10. Managing the course, guiding the class, evaluating

10.1 Roles and reports

This section becomes useful when the Moodle site is created and all the required material is uploaded. So far, the previous parts have covered the future content of the renewable energy courses and the process of adding new content to Moodle, now let us see some of Moodle underlying capabilities.

Roles. At first, it seems administrative, but understanding roles and groups has key importance in working with Moodle. For later versions of Moodle, we separate six possible roles: guest, student, non-editing teacher, editing teacher, course creator and administrator. A person's role (one out of the six) in the course determines what capabilities the person will have. Let us start with roles, as anyone who wants to work in Moodle needs to be assigned with a role.

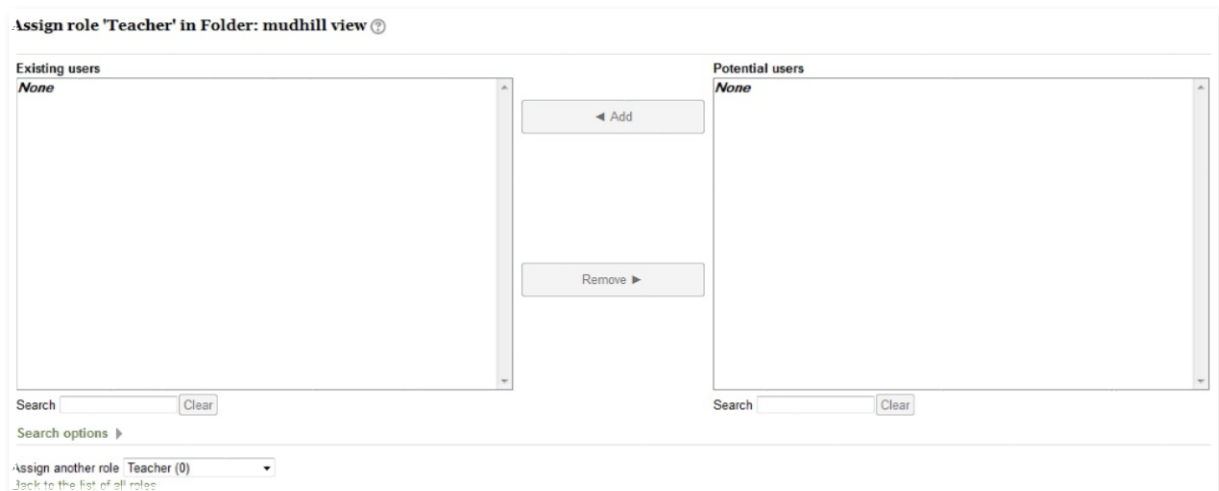


Figure 44. Assigning roles in Moodle

When creating educational material, a teacher receives the role of an editing teacher but this role must be changed into course creator, when the different educational material and resources are uploaded into the newly generated courses. In Administration box, there is a link called 'Assign roles'. This page is usually of two columns, the left column lists users, who

currently have that role, and the right column lists users, who do not. At first, students will not have account to our Moodle, so it is the task of the course creator to create students' accounts. What is more, all users have to have an account on the Moodle site before we can assign them a role. If our course is only visited by students then their roles do not require role assignments. Hopefully, it will not happen during the course work but removing students also takes place in Administration > Assign roles section.

As administrator will define the roles for students, teachers do not have to care about it.

Reports. Once the course is up and ready and students are working/struggling with the learning material, Moodle provides with detailed logs and participation reports of student activity. In 'Administration' block, by clicking on 'Reports' the following options appear logs, current activity, activity report.

- logs – Selecting any combination of group, student, date, activity and actions; and by clicking the 'Get these logs' button the editing teacher can see what pages the students accessed including the time and date together with
- current activity – the 'Live logs from the past hour' link in the middle of the Reports page opens a pop-up window listing all course activity in the past hour, which refreshes every minute
- activity report – this list shows how many times each course activity has been viewed and also the last time it was viewed

10.2 Evaluation

Evaluation is always a significant part of all educational procedures. Within the IN2RURAL project, evaluation also is considered crucial, as it gives feedback to teachers on individual student performance. Student evaluations are based on their activities. Which factors will play active roles in the evaluation process?

Quizzes - students are to read several pdf files distributed in five chapters in each of the online course modules. Each chapter is finished with a quiz (it means five quizzes in the five chapters

altogether). The database of each quiz contains 20 questions out of which five (randomly chosen) appear in each quiz. Students are to achieve 60% that means that they need to answer at least three (out of 5). If they achieve at least 60%, they may continue with the new set of the learning material. If they fail, that is, they achieve two good answers (or less) they have to redo the quiz. Students should read the pdf files again and re-open the quiz. The number of quiz attempts is not bounded as in quiz creating section we advised unlimited attempts settings. Students with more attempts are not punished compared to those who managed to achieve the 60% for the first attempt. Our primary aim is to make students complete at least 60% of all quizzes. In the quiz statistics, the evaluating teacher receives information on the number of attempts and the highest score.

Forum participation – teachers are asked to create forums in each chapter of each module. We intend to provide active student participation that is why the forum/thread contributions of students also count in the final evaluation. Unfortunately, Moodle is not able to count these contributions, so it is the evaluating teacher's task to count all contributions for all participating students. We expect a student to participate in at least 80% of all forums debates, discussions...etc.

Mid-term case study submission– students are expected to write a case study (*docx* format) given by the instructions of the teacher during the learning process. Midterm revision means teacher's comments with possible improvements and advises.

In case of the latter, teachers are required to give a detailed list of the items that should be corrected by the students (before handing in it again).

Final case study submission-When uploading the final version of case study into Moodle, the evaluating teacher is supposed to give a positive (accepted) or negative (rejected) feedback.

If these three items (quizzes, forum participation, case study) are adequately produced by the students they are given a mark based on the following evaluation procedure:

- They have obtained 60% of mark in all chapters of all modules
- They participate in at least 80% of the debates proposed in the forum
- Fully develop a study case combining rural development (module 1) and one of the modules 2, 3 or 4 and have a positive evaluation from the teachers involved.
- Each study case will be supervised by the teachers teaching their corresponding module (2, 3, 4) and module 1 (for the part of rural development)
- The students will develop the study case the last 3 weeks of June 2016.
- The student will have to present to the corresponding teacher his work on the case study at the middle of those 3 weeks, so the teacher can give guidelines and propose improvements to be implemented
- The certificate of the course will include a sign of Low (Rejected), Good, Very Good, Excellent description.

11. Abbreviations

BYOD – Bring Your Own Device

HEI – Higher Education Institutions

ICT – Information and Communication Tools

IO – Intellectual Output

LMS - Learning Management System

OER – Open Educational Resource

RREE – Renewable Energy

UJI - Universitat Jaume I

12. References

<http://cent.uji.es/pub/lpi-docencia>

<https://owl.english.purdue.edu/owl/section/2/>

<https://moodle.org/mod/forum/discuss.php?d=310357>

<https://moodle.org/>

13- Annexes

Annex 1. Template of learning material

MODULE X: NAME OF MODULE X

CHAPTER X. Name of chapter x

Subchapter x.x - Name of chapter x.x

Author

Institution

Summary: It should be a maximum of 5-line long brief summary of the pdf content. Try to be innovative and create short statements that raise interest. It should be a maximum of 5-line long brief summary of the pdf content. Try to be innovative and create short statements that raise interest. It should be a maximum of 5-line long brief summary of the pdf content. Try to be innovative and create short statements that raise interest.

Part 1

The main topic of the learning material is divided into different chapters. In general, this usually includes a brief introduction followed by the scopes of the learning material, ending with the results (if any). This is the beginning of the learning material and this sentence serves as the first sentence³. (In addition, the first sentence is followed by the second sentence⁴). For the use of tables, the following construction should be implied:

Table 1. The title of the table must be indicated in all cases.

| | Work stations | Number of employees |
|----|---------------|---------------------|
| X | 1 | 40 |
| Y | 2 | 33 |
| Z | 4 | 29 |
| Zs | 3 | 25 |

³The first footnote.

⁴If footnotes appear in a sentence in parentheses, the number (of the footnote) must be inserted within the parentheses.

(Source:)

Part 2

In the second part all text should be written with 2.5 cm margins on all sides; using Times New Roman 12 pt. The total length of a pdf file is 3-10 pages. For tables and figures, the author is required to use the handbook. As far as style is concerned, we use the APA-style.

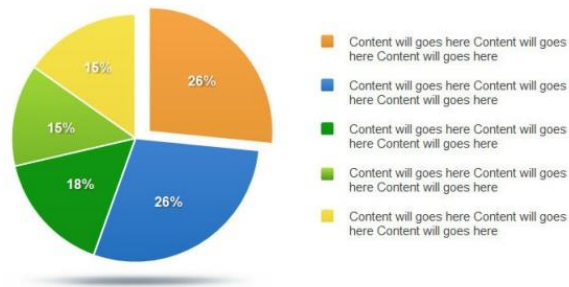


Figure 1. A distribution shown in a pie chart

Part 3

It is the author's task to decide how many parts s/he uses. When creating a piece of learning material, try to be clear and precise.

References

Novák, M., & Langerová, P. (2008) Raising efficiency and effectiveness in teaching mathematics in non-English speaking countries: an electronic bilingual dictionary of mathematical terminology. In: *Proceedings of 3rd International Conference on the Teaching of Mathematics at the Undergraduate Level*. Istanbul: TMD (Turkish Mathematical Society), 2006.[CD-ROM].

Posner, M. (2004) Neurological systems in individual differences. *TS Record*. Retrieved 3/06/2003, from <http://www.tcrecord.org/PrintContent.asp?ContentID=11663>

Annex 2: Template of quizzes

Excel template for multiple-choice test questions

| | question | right answer | wrong answer | wrong answer | wrong answer |
|-----|----------|--------------|--------------|--------------|--------------|
| 1. | 2 + 2 = | 4 | 3 | 6 | 5 |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| 9. | | | | | |
| 10. | | | | | |
| 11. | | | | | |
| 12. | | | | | |
| 13. | | | | | |
| 14. | | | | | |
| 15. | | | | | |
| 16. | | | | | |
| 17. | | | | | |
| 18. | | | | | |
| 19. | | | | | |
| 20. | | | | | |

Annex 3: Template of glossary terms

| Technical term | Definition |
|----------------|-------------|
| A | See Ampere. |



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