

IMPROVING THE PROFESSIONAL SKILLS IN GREEN CONSTRUCTIONS THROUGH ONLINE TRAINING

Erasmus+ Strategic Partnership KA2

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O7 - Final Report

MANUAL FOR TEACHERS



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E-LEARNING OVERVIEW

Computer based training, or education, has its roots in the 1960s. The technology was developed mainly for the training of individual trainees connected to a computer, but without any online support as we know it today.

According to Wikipedia (http://en.wikipedia.org/wiki/Distance_education) distance education, however, can be traced back to 1728 in Boston – a long time before the World Wide Web was devised in 1990. Though separated by many years, these technologies and methods of learning converged to produce what we call eLearning. There is no generally accepted meaning for the term. One of the major thinkers in eLearning is Elliot Maisie, (<http://www.masie.com>), his definition is:

"e-Learning is the use of network technology to design, deliver, select, administer, and extend learning".

With the development of the collaborative and social technologies of Web 2.0, it became possible to implement collaborative technology enhanced learning. This is sometimes called eLearning 2.0. Or Technology Enhanced Learning – TEL. There are some important questions that should be asked of these approaches:

- What do these technologies offer to a teacher?
- Are these technologies just for games and entertainment?
- Or, do these technologies offer students a real opportunity for learning?
- Can these technologies improve learning for students?
- What does today's school generation expect from us?
- How can the web technology help?

At the moment it is difficult to predict how the networking technology will change our learning habits, our teaching and pedagogical methods. We do not have readymade recipes for utilizing the new tools.

The last years cannot be considered a success story of eLearning at all. The technological innovations have frequently tempted us to be too optimistic. It is clearly proven that the „e“ prefix in itself will not solve the problems of the educational crisis worldwide. We must be aware of the fact that there are no instant answers to these questions and no instant solutions to meet the challenges of the Net Generation. Not to mention the importance of involving the practicing teachers.

This chapter will help teachers to understand and apply the basic concepts of technology-based teaching/learning – the history of e-learning, the technological innovations behind the emergence of the e-learning developments and trends. In order to achieve our objectives we have to understand and utilize the findings of the past.

TECHNOLOGICAL FORECASTS - COMMUNICATIONS

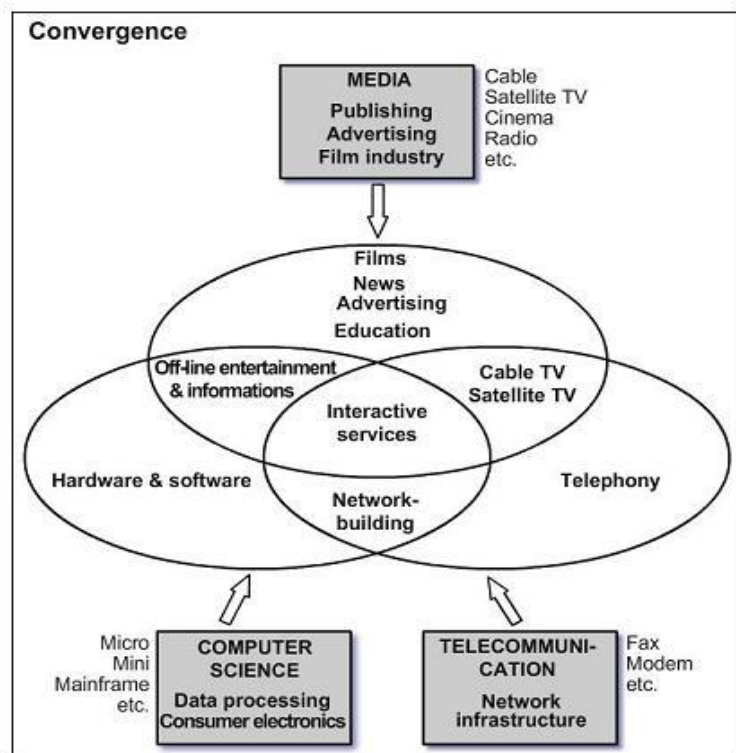
In November 1992 (15 years ago!), Scientific American published a special issue on communication, computers and networks [1]. Here is a quotation from the article by Michael L. Dertouzos, employee of MIT. The author predicted that:

- Business letters will arrive in 5 seconds instead of 5 days,
- Designers and manufacturers living in continental distances from each other will be able to cooperate,
- Electronic purchasing will become a possibility,
- Parents can stay at home with their children while working for a remote company,
- Recreational locations will be chosen electronically,
- Films can be purchased electronically,
- Retired engineer from Florida teaches algebra for high school students in New York ,
- The new infrastructure lightens the gap between the poor and rich.”

In 1992, then, this scenario seemed to be a utopia; today it is almost reality.

According to researchers, the social effects of this change can only be compared to Gutenberg’s innovation of printing. Book printing made possible the accumulation and distribution of human knowledge on an industrial scale. Will the information age predict the end of the Gutenberg-Galaxy (en.wikipedia.org/wiki/The_Gutenberg_Galaxy)? This prospect, for many of us who were raised in the 20th century, does not seem to be so welcome.

History however may provide some peace of mind. On many occasions there has been the expectation of quick, and life-changing, benefits from various technical inventions. However, over time, and after the early elation is over, there has been a realization that transformational change would take more time. The Japanese, for example, developed and published an information strategy in 1980 in which they defined innovations for the following ten years. Among these plans there were machine translation systems for spoken languages, solutions for speech recognition, and a 5th generation computer system with human-like artificial intelligence. The strategy was too ambitious, however now-a-days (2019, almost 40 years after the strategy) they idea seem to be reality.



E-LEARNING AND ICT

The generation born after 1980 is sometimes called the Net Generation – the digital natives. They are the first generation to become adults in the information society. They know the underpinning technology of the information society in an almost sub-conscious way. What does ICT mean?

The acronym is made of the initials of "information and communication technology" or, more simply, info-communication technology. What is behind the evolution of this concept?

TECHNOLOGICAL CONVERGENCE, GLOBALIZATION

Sociologists have termed the 20th century the age of technological convergence and globalization. Earlier analogue technology was gradually replaced by an era based on digital technology. Digital video and television have appeared in recent years, for example, and analogue telephone lines have been slowly replaced by digital solutions. (Withington, 1967) Due to digitization the industrial sectors of:

- Computer technology and computerized networks,
- Telecommunication (telephone, fax), and
- Audiovisual appliances (TV, radio, entertaining appliances) are gradually merging.

(Source: Communication World Report, Hungarian UNESCO Committee, Budapest 1988)

This is called **technological convergence**. Mobile phones can be used for taking pictures, listening to music. With small communications devices we can connect to the Internet, and via Internet we can watch TV, listen to the radio and phone...

MULTIMEDIA

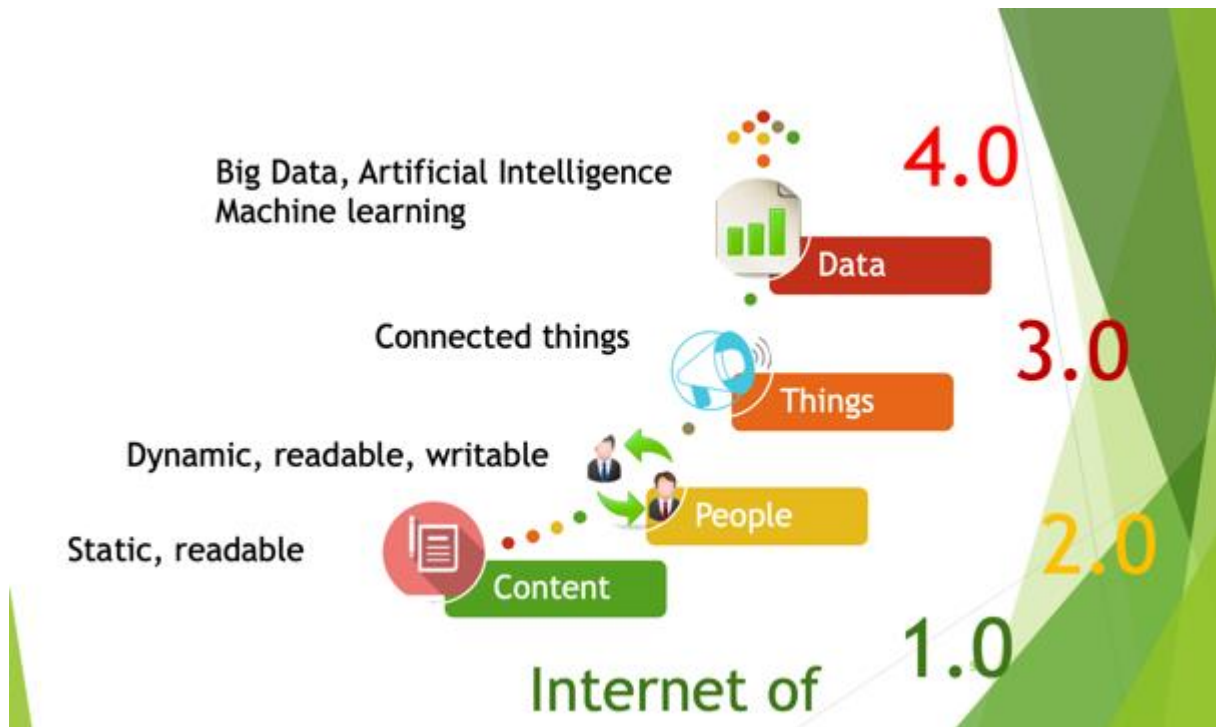
The hardware support that makes it possible to send, read, listen to digitized multimedia information (images, video, audio) to/from any part of the world quickly and with high quality relies on multimedia technologies.

Nowadays we live in a new communication age with its enabling technology being wireless technology. Mobile phones have become universally adopted at a speed never experienced before. A new concept has become possible for the next generation of e-learning – 'm-learning' or 'mobile learning'. This is education delivered through mobile technology. (Keegan, 2005)

The hardware support that makes it possible to send, read, and listen to digitized multimedia information (images, video, audio) to/from any part of the world quickly and with high quality relies on multimedia technologies.

The information society is a world model of 'globally' based knowledge. It accesses the whole the history of human civilization and culture. It came into being, and expanded from, the end of the 20th century (Pintér R., 2008). Its development, however, started in the 60s and 70s. The information society sits on an economy based on know-how, where information has become an asset. High quality technical investments and constantly upgraded information technology requires "lifelong learning" for

the citizens of this society and so the problem of renewing our educational systems comes sharply into focus.



E-LEARNING TRENDS

Computer Based Training (CBT) is not a new idea. In 1967 – more than 40 years ago – the US Computing Report magazine reported that astronauts who participated in Apollo mission practiced first on simulators before undertaking the task they had to accomplish in reality. In the 60s computer-controlled simulator programs were also used to train civil and air force pilots.

Even in those days, teachers were worried about students spending too much time in front of the computers. Anthony Oettinger, Professor of Harvard University, expressed his thoughts in 1967 as *“They are not afraid of computers at all. All the more the problem is, rather, how to save them from becoming hostages of the computer.”*

By early 90s CBT migrated into today’s e-learning.

E-learning 1.0 - 1990-



- Multimedia CDs
- Online learning materials
- Virtual version of classrooms: Learning Management Systems - LMS

The widespread use of Internet and the improvements of multimedia systems have made educational applications more dynamic.

E-learning 2.0 - networked learning

- Active online learning
- Writable platforms (blogs, wikis)
- Social: online knowledge sharing, communication, collaboration
- Tutors, mentors are facilitators
- Participants may be content creators



According to the most widely used definition e-learning is an educational form that uses the tools of information and communication technology (ICT) for improving the efficiency of education and training. The table below describes the most important stages of e-learning development.

As with computer generations, timing definitions are approximate. However, the demarcation line between e-learning 1.0 and e-learning 2.0 is unusually clear. In e-learning 1.0 system students read, listen and adopt. They have limited options for interactivity, except in the area of simulations, or multiuser games. In the era of e-learning 2.0 there are innumerable tools to generate interactivity, for

exchanging and sharing knowledge through the internet. Self-organized learning communities are also now rapidly developing, where there is a blurring of the difference between ‘teachers’ and ‘students’.

In 2004 e-learning 2.0 became a major focus and nowadays there is even mention of e-learning 3.0.

E-learning 3.0 - 4.0 - cancel the „e”



E-LEARNING FRAMEWORKS

The golden age of e-learning systems (the Learning Management Systems and Learning Content Management Systems) lasted from the early 90s until the Web 2.0 tools started to appear. Many people predict that the age of strictly teacher centric ‘virtual schools’ may be over. In fact more and more educational institutions now create their own e-learning systems. Moodle is a good example of this type of framework being used, with more than 47,000 validated sites in more than 208 countries (<http://moodle.org/stats/>) in 2010. While in the 90s development tended to represent a huge amount of capital finance for institutions, in the era of 2.0 capitals cost-free solutions are becoming commonplace. It appears that many institutions are adopting systems which tend to incorporate e-learning 2.0 systems.

The characteristics that an e-learning 2.0 system exhibit are as follows:

Openness:

1. Learning environments should not create a closed ‘isolated system’. They should be open to, and interoperable with, other systems and solutions.

Participation:

2. Teachers and students should cooperate in the development of the environment. Students should have the option to integrate external tools used by them. Teachers and students should work on the same platform with the same tools. Students should get the opportunity to create and share new lessons.

3. Participants should be able to tag their own contents freely. They should be able to develop their own taxonomy reflecting those parts of lessons which interest them most.

Motivation:

4. Learning environments should support participative activity in a user-friendly manner.

5. Learning environments should support developing communities, and should provide options for participants to get to know each other.

6. Teachers should be present in the learning environment. In addition to creating study materials they should emphasize organizing conversations and exchanging experiences

Tracking, evaluations, feedback:

7. Teachers/Administrators should have the functionality to track the learning of individual participants.

8. Teachers/Administrators should provide options for feedback.

9. e-Learning systems should provide functionality participants to reflect on their learning.

10. Learners should have the option to express their opinions about the content offered.

The information society is a carrier of a new social tension: the gap between those who can get economic positions, and those who cannot, grows wider. A digital gap can be created between the different social classes of a nation (when poor people or certain minorities fall behind) or between different economies.

In the development, or in the prevention, of a web culture, computer and Internet supply plays a prominent role, but it is not just a technological matter.

No wonder that those who have experiences from traditional educational institutions are skeptical of many issues relating to this new pedagogic era. There can be no doubt that the way knowledge is acquired in the 21st century is changing rapidly. School age pupils read fewer books than previous generations and when they need to look up something quickly, they will tend first of all to browse the World Wide Web, rather than a reference book.

It appears that teachers feel that there are many drivers and barriers to the adoption of computers, the Internet, e-learning and multimedia into the teaching system.

The opinions can all be readily justified and are true in very many situations. Teachers, schools, and parents in the 21st century are all faced with new challenges. Teachers not only have to face up to

these drivers and barriers, but they must also support students and parents in coming to terms with these drivers and barriers.

Among young people there are now many computer addicts. This is perhaps due to the fact that children use computers in a way that designers did not expect. However, many claim that computers

- Adapt users to superficiality (there is no need for thinking, only for trial and error),
- Make users conceited (I can use it but my parents cannot),
- Generate aggressiveness; (rude games and the uncontrolled use of games).

The Hungarian psychologist Attila Krajcsi (2000) collects "the old troubles of the Internet" as he calls them, and claims that "***the often cited harmful mechanism that are considered to be the threats presented by the Internet are not all related to the net but rather to old dangers which existed before and resurfaced in the Internet era***".

See some examples of this:

The question of reliability: you cannot know who is at the other end of the communication channel.

Authenticity: to what extent can we trust the information from the Internet?

The loss of sense of reality: those spending too much time online, lose contact with reality.

Alienation: those addicted to the computer gradually lose their relationships with other people.

There is a loss of identity: you can become whoever or whatever you want on the Internet as a result of which you yourself no longer know who you actually are.

Aggression: computer games are alien to human life and make their users violent.

The appearance of extremes: pornography and pedophilia; the Internet is the favorite gathering point for men of unnatural inclinations and extremist beliefs.

Communication becomes impoverished: the potentials of the new means of interaction result in the loss of vibrant communicative practices so that language becomes stunted.

Data smog: the abundance of information overwhelms the users since there is no of finding one's way through the mass of data.

"However, there is nothing mystical about the Internet. It is exactly the same as the world that surrounds it, a claim that can be easily justified since the world is also violent, certain people are evil, and sexuality appears considerably in our everyday life as well. The world is reflected in the contents of the Internet and its usage...We should not disregard the fact that there is nothing else on the Internet, but uploaded content that had existed in the real world beforehand, it is nothing less, nothing more."
(A. Krajcsi, 2000)

Children can be immersed in the use of computers; developing personalities which exist only online, spending many hours in single user and multi-user games. **But what do many teachers and parents**

know about computer games, and immersive environments? How does computer-based gaming affect our children? Are there any good effects from playing computer games? Parents buy computers because they feel they should provide their children what they think they need.

The ideal position is where computers and Internet are more than just for amusement for students and additional work for teachers. To get to this position, e-learning has to become a more efficient and more realistic tool for everyday teaching. There is also a need for more learning opportunities for teachers and in the development of new methods of teaching and learning.

IT infrastructure in domestic educational institutions has significantly improved over the past few years. However, a survey from 2006 about the “application of e-learning syllabuses for vocational training” shows that most secondary schools were only able to create proper computerized classrooms to teach information technology itself. Usually there are few options for teaching traditional subjects in computerized classrooms. There is still a need for further improvements in this area.

Of course, it is impossible to digitize those centuries’ old, very reputable systems of learning overnight. Would we want to? The web has taught us not to design a command economy model for anything, especially social activities such as teaching and learning.

But can we afford to ignore the possibilities offered by the information age? Is it possible that teachers can keep control in the digital world without the knowledge and resources that the web provides?

The development of networks and the Internet, and the numerous new tools, have started a new age in learning. It has become clear that not only must new learning concepts be defined but everything that we know about pedagogy, methodology, schools, students, and teachers, must be reconsidered and rebuilt if necessary.

E-LEARNING PLATFORMS

There is a wide range of e-learning platforms (sometimes called Virtual Learning Environments or VLEs) on offer to users. These platforms deliver a range of complexity and versatility in their functions and services. Looking at the feature sets it is easily possible to consider an educational multimedia CD and Moodle platform as different types of e-learning solutions, as both are specific software applications. However, at a first level, different e-learning systems must meet the same requirements as any other software, such as:

- Providing stable and reliable operation,
- Providing a comfortable, user friendly interface which complies with all relevant legislation in respect of accessibility and ergonomic requirements.
- Offering tools for following and recording the users' activities,
- Managing authority and authentication,
- Compatibility with the host computer environment,
- Minimizing system requirements for operation,
- Easy installation,
- On-line user support,
- Options to refresh software and contents,

- Offering productivity support.

The most basic services of educational software are:

- To present learning material delivered in different forms and formats,
- To give support to users in their exercises and their practice with the delivered knowledge,
- To assess the results of the learning process and to give feedback for the learner.

Early off-line educational programs (the products of first-generation e-learning such as CBT) actually achieved many of the above requirements. However Multimedia CDs may have looked impressive but the content was very static in the sense that its content could be difficult or impossible, to refresh or update. The single user, multimedia approach reflected a traditional, rigorous educational approach: to deliver, to strengthen and to evaluate the knowledge acquired by the student. Creating multimedia experiences can be similar in ways to creating a traditional educational movie.

On-line platforms operating on the Internet are second generation computer based learning innovations and can be classified as e-learning 1.0. Such traditional learning environments are usually developed to operate over a computer network. The learning system may also integrate some institutional services such as student enrollment or examination. Services can be categorized in two major groups:

- Supporting the learning process and the administrative work related to learning,
- Supporting content authoring (creating, editing and updating learning materials).

The sub-system which supports the learning process is called a Learning Management System – LMS. The tasks of LMS are:

- Managing authorities, monitoring access, registration of users,
- Presentation of lessons,
- Managing the assessments, scheduling the students' tasks,
- Providing options for practice,
- Supporting the tutor's activities
- Organizing courses,
- Managing enrollments,
- Recording students' activity and performance,
- Managing the evaluation of the students' performances,
- Producing records and statistics,
- Supporting communication between teachers and students,
- Supporting quality management, for example course evaluation via students' feedback.

E-learning frameworks are well developed in many higher educational institutions all over the world. Lecturers upload lessons with many links to reading materials, and they can formulate requirements and manage examinations. This is the kind of framework is typically an 'e-learning 1.0' product – a virtual model of institutionalized education. Rigid, teacher and content focused, participants are not expected to contribute in the system. They may be only passive consumers of knowledge-based content.

In mixed systems, students can download educational contents saved on central servers to their own computers and use them without a network connection. While students are working on their own computers, data (such as test results for instance) is stored locally and when they re-connect to the network, data is uploaded to the central database (the system synchronizes local and network databases at each connection). Microsoft's training courses operate in such a mixed system – for example the Microsoft Certified Partner program. In this example, the student is provided with a large quantity of training lessons, and the online examinations are organized (in a given country) at special, accredited examination centers.

• **Participants and Tasks**

Tasks supported in platforms are divided between the LMS and the LCMS. What visitors to and participants in a course can actually see and what options (rights) services they can access depends on what roles and authorizations they have. Administrators have the highest position and authorization, while visitors have the lowest. The distribution of authorities is the responsibility of system administrator, but the entrance procedure and the access are supported by the platform (LMS).

The LMS exempts tutors from certain administration work. They do not have to record absence, for example, and do not have to correct tests performed by students. All these are done automatically.

The authors of e-learning content are called instructors. Teachers who help and supervise students are tutors. These new titles reflect the non-traditional roles they have to fulfill. For example, instructors plan student activities and they are responsible for the professional relevance and validity of the course content.

It does not matter whether we talk about distance learning or full-time courses, the role of teachers (the tutor) is crucial. Before thinking of ICT as some kind of network technology that reduces the work of teachers, consider what kind of tasks they have in an online course:

- Learning objectives must be considered, syllabuses and exercises must be planned according to the goals,
- Lessons, exercises and tests must be prepared and uploaded in advance,
- Student activities must be planned and organized in the given LMS,
- Constant presence is required! Student activities must be followed up and evaluated individually. For every little action there must be some reaction (otherwise motivation is lost).

In this kind of environment, it is possible for the tutor to have to support each student individually. This is not normally possible in a real-space classroom. However, such activity can take a tremendous amount of time! It has proved a real challenge to find a business model which supports such a level of activity. Who will pay for such support?

• **Communication and Cooperation**

In contrast to offline solutions, the great advantage of e-learning frameworks on the Internet is that there is the potential for communication and cooperation amongst participants. The “classic” communication opportunities are:

- E-mailing,

- Chatting,
- Forum , and
- Video conference.

This list will rapidly become longer as web technology (web 2.0 and the future semantic web) develops.

- **Finally...**

The development of framework systems began in the 90s. First solutions are often criticized because they do not do anything but preserve the bad practices of traditional teaching within a modern technological environment. Such solutions have not become, or allowed to become, obsolete because as long as institutions based on today's system survive, the functions which support will also survive.



On the other hand, and more importantly, modern frameworks are much more open than earlier ones. They tend to support cooperation and try to integrate the latest tools from web 2.0 technology. Moodle is a so called a web2.0 aware platform.

MOODLE E-LEARNING FRAMEWORK

Moodle is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a free web application that educators can use to create effective online learning sites. It has become very popular among educators around the world as a tool for creating online dynamic web sites for their students. To work, it needs to be installed on a web server somewhere, either on one of your own computers or one at a web hosting company.

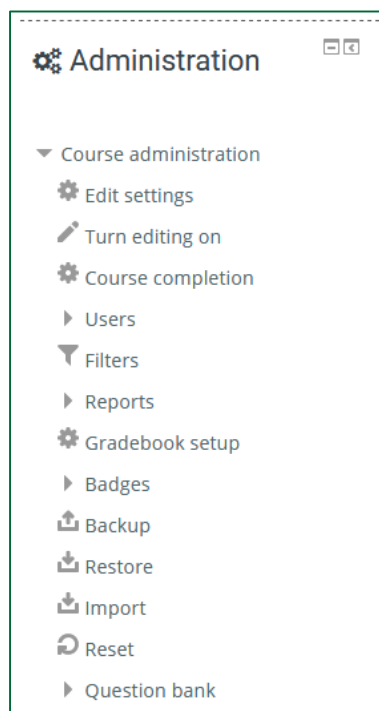
The focus of the Moodle project is always on giving educators the best tools to manage and promote learning, but there are many ways to use Moodle:

- Moodle has features that allow it to scale to very large deployments and hundreds of thousands of students, yet it can also be used for a primary school or an education hobbyist.
- Many institutions use it as their platform to conduct fully online courses, while some use it simply to augment face-to-face courses (known as blended learning).

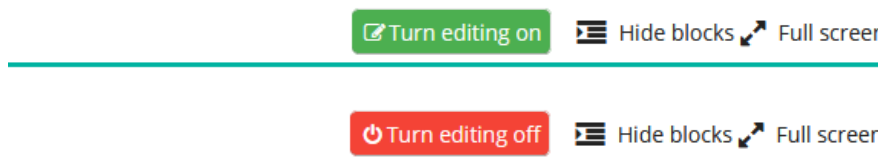
- Many of our users love to use the activity modules (such as forums, databases and wikis) to build richly collaborative communities of learning around their subject matter (in the social constructionist tradition), while others prefer to use Moodle as a way to deliver content to students (such as standard SCORM packages) and assess learning using assignments or quizzes.

TEACHERS IN MOODLE PLATFORM

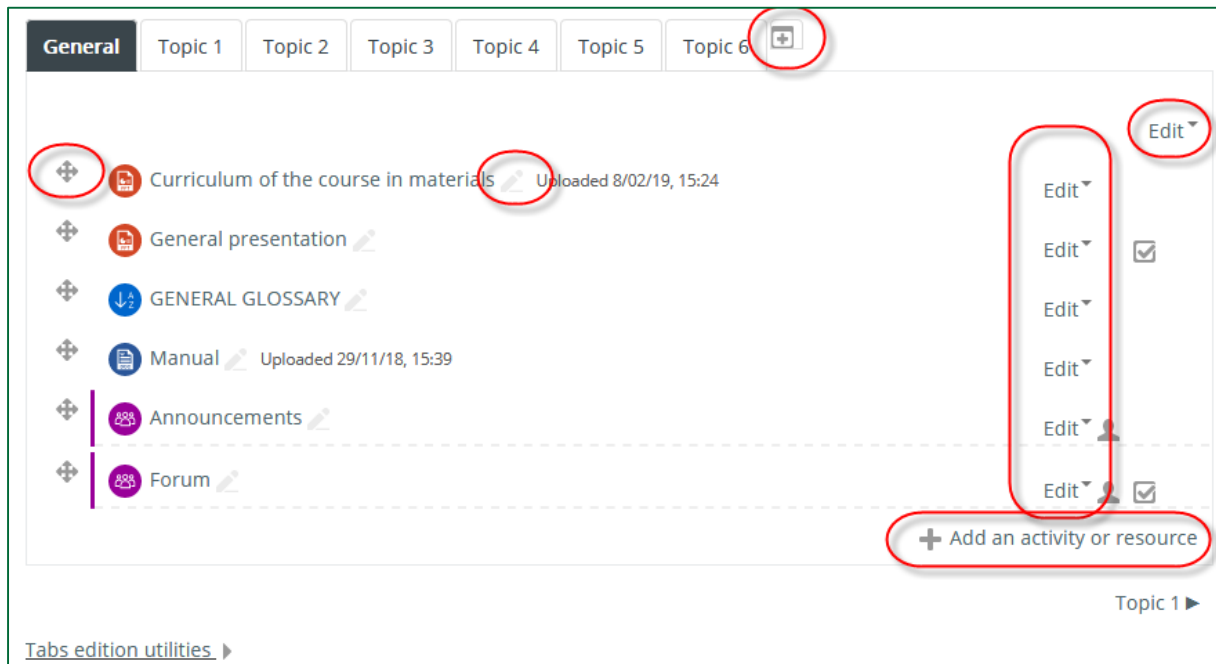
User with teacher role see a different version of the platform from what students can see. Teachers have access to more functions, and have more rights in course administration and content management. Course administration activities for user with teacher role can be accessed in the Administration block on the left of the screen (this block is not visible for students).



To be able to manage content and activities, teachers can switch to editing mode on the top of the screen. (This option isn't visible to students either.)



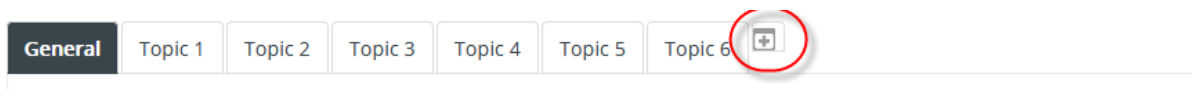
When turning editing on, all the icons (hidden before) appear next to the elements that can be edited.



HOW TO HANDLE TOPICS


ADDING A TOPIC

Click on the + sign next to the last topic.



DELETING A TOPIC

Highlight the topic to be deleted, and select the Delete section option from the Edit menu in the top right corner.



ADDING LEARNING CONTENT

LESSON

The lesson activity module enables a teacher to deliver content and/or practice activities in interesting and flexible ways. A teacher can use the lesson to create a linear set of content pages or instructional activities that offer a variety of paths or options for the learner. In either case, teachers can choose to increase engagement and ensure understanding by including a variety of questions, such as multiple choice, matching and short answer. Depending on the student's choice of answer and how the teacher develops the lesson, students may progress to the next page, be taken back to a previous page or redirected down a different path entirely.

A lesson may be graded, with the grade recorded in the gradebook.

Lessons may be used

- For self-directed learning of a new topic
- For scenarios or simulations/decision-making exercises
- For differentiated revision, with different sets of revision questions depending upon answers given to initial questions

There are 2 basic Lesson page types that the student will see: question pages and content pages. There are also several advanced navigational pages which can meet more specialized needs of the Teacher. The Lesson module was designed to be adaptive and to use a student's choices to create a self-directed lesson.

The main difference between a Lesson and other activity modules available in Moodle comes from its adaptive ability. With this tool, each choice the students make can show a different teacher response/comment and send the student to a different page in the lesson. Thus with planning, the Lesson module can customize the presentation of content and questions to each student with no further action required by the teacher.

1. In the bottom right corner of the Topic choose the **Add an activity or resource** link;



2. Select the activity called **Lesson** in the pop-up window, and tap **Add**;

Add an activity or resource x

ACTIVITIES

- Assignment
- Chat
- Choice
- Database
- External tool
- Feedback
- Forum
- Glossary
- Lesson
- Quiz

The lesson activity module enables a teacher to deliver content and/or practice activities in interesting and flexible ways. A teacher can use the lesson to create a linear set of content pages or instructional activities that offer a variety of paths or options for the learner. In either case, teachers can choose to increase engagement and ensure understanding by including a variety of questions, such as multiple choice, matching and short answer. Depending on the student's choice of answer and how the teacher develops the lesson, students may progress to the next page, be taken back to a previous page or redirected down a different path entirely.

A lesson may be graded, with the grade recorded in the gradebook.

Add
Cancel

3. Give a title for the lesson, and save the changes.

Adding a new Lesson to Topic 11 ?

▶ Expand all

▼ General

Name *

Save and return to course
Save and display
Cancel

4. Add the first page to the lesson (Title and Content);

What is a Passive House? ?

Preview
Edit
Reports
Grade essays

Collapsed
Expanded

What would you like to do first?

- Import questions
- Add a cluster
- Add a content page
- Add a question page

▼ Add a content page

Page title *

Page contents

Table
A^A
B
I
List
Link
Image
Video

U
S
X₂
X²
Align
Indent
Table
Ω
Grid
Undo
Redo

Eraser
Refresh
Fullscreen

Climate change is one of the greatest challenges to humanity in the long run. The role and responsibility of local authorities for the effect of greenhouse gases, countering climate change and increasing the production of renewable energy is growing. This is essential for the economic, social and environmental dimensions of sustainable development.

The building sector has a key role to play in implementing the EU energy efficiency objectives: around 40% of the energy consumption and a third of CO₂ emissions are attributable to buildings. With the adoption of Nearly Zero Energy Buildings throughout the EU from 2020 onwards, these figures will be reduced in a perceptible and sustainable way.

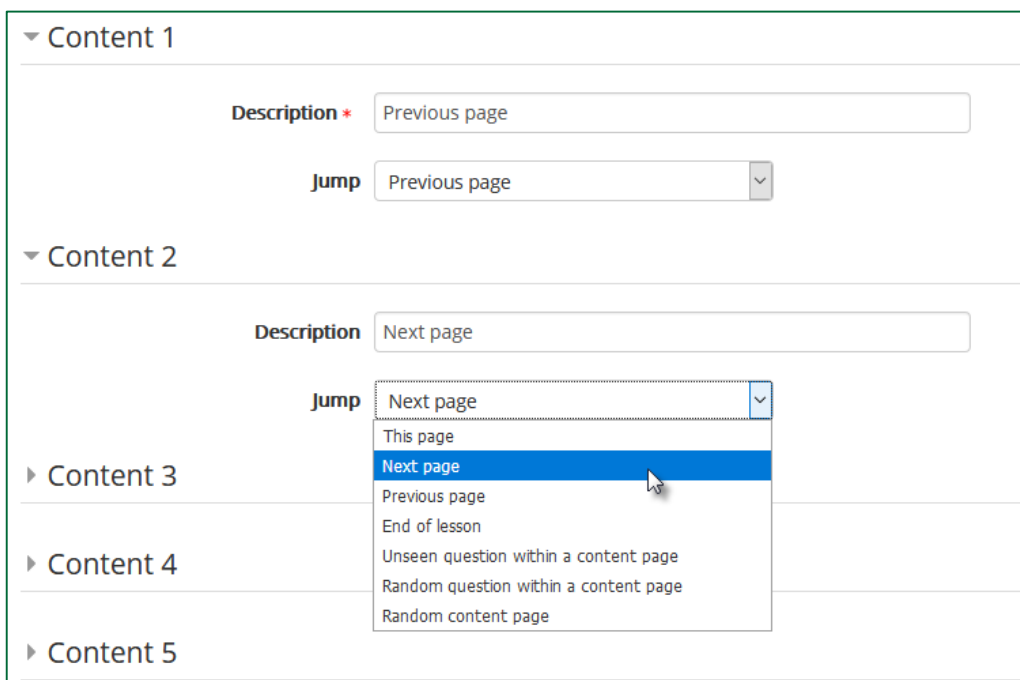
Since the ratification of the Energy Performance of Buildings Directive, the 28 Member States have been developing their own national definitions of NPISH that will apply from 2020. The Passive Building standard now offers highly efficient and economically viable solutions that can to successfully combine with energy from renewable sources.

Arrange content buttons horizontally?

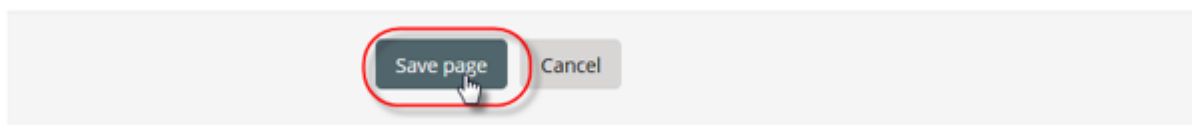
 Display in menu?



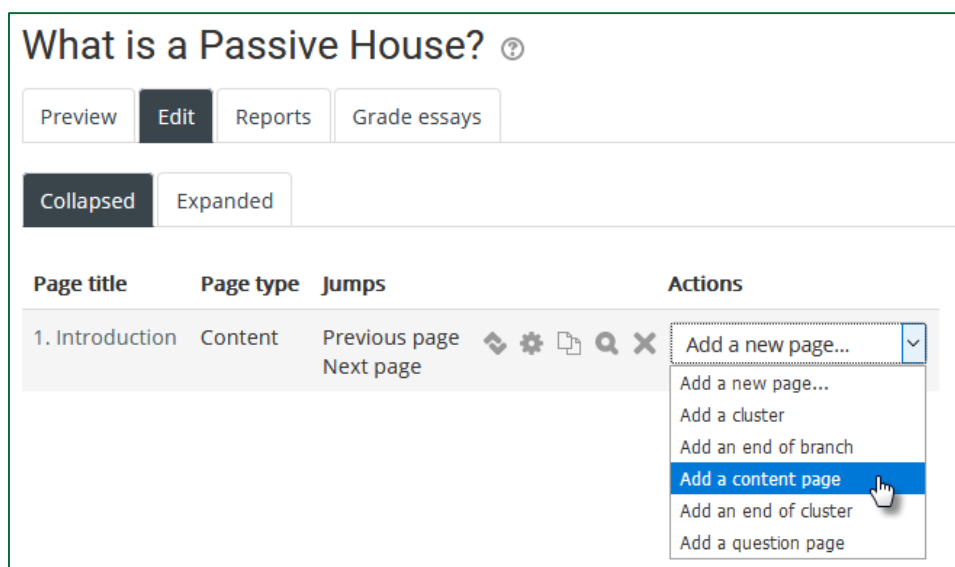
5. Place the navigation buttons to the bottom of the page; (There is no need for previous page at the bottom of the first page, and similarly there is no need for a Next page button on the last page.)



6. Save the page;



7. Add another page to the **Lesson** from the Action list next to the existing page, selecting the option: **Add content page**;



Repeat the process from step 4. on.


Inserting a picture in the lesson

1. Click on the Insert image icon

▼ Add a content page

Page title *

Page contents

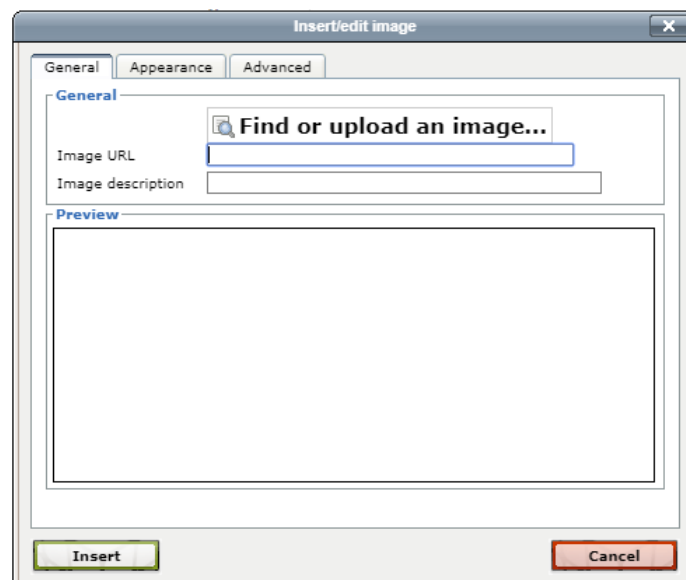


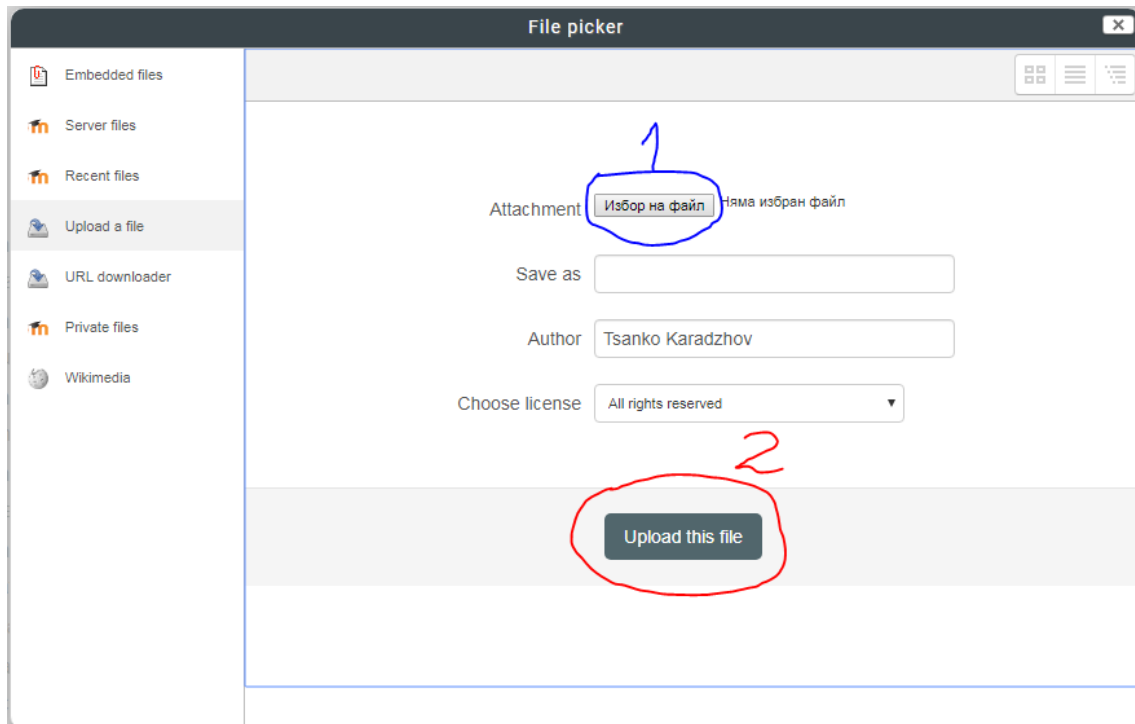
Path: p

Arrange content buttons horizontally?

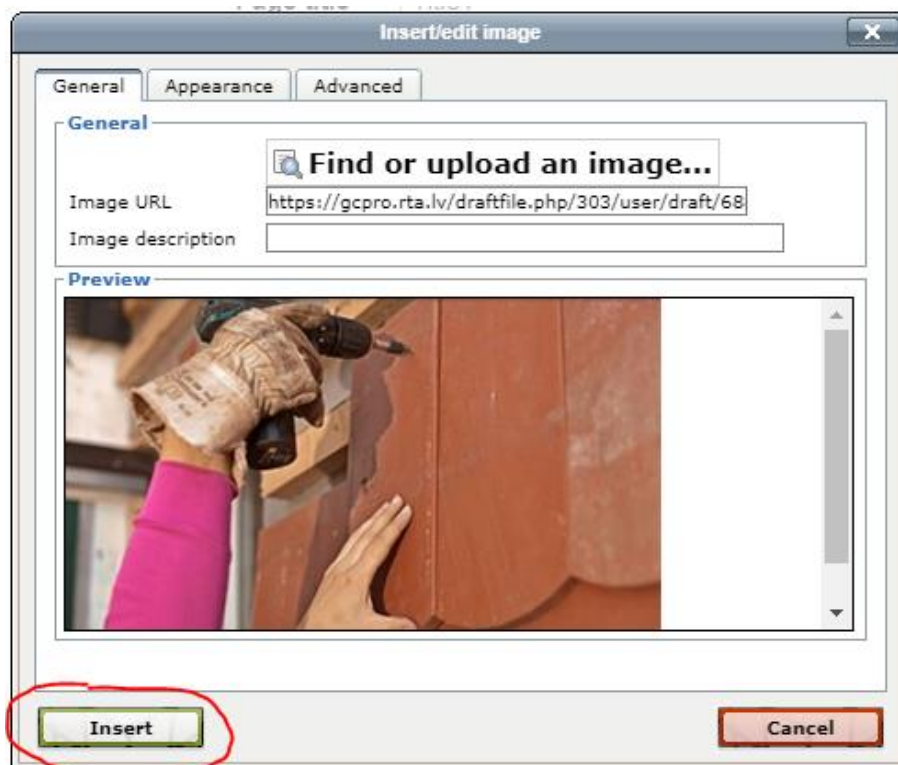
Display in menu?

2. Use File picker to select and existing image or upload a new one.





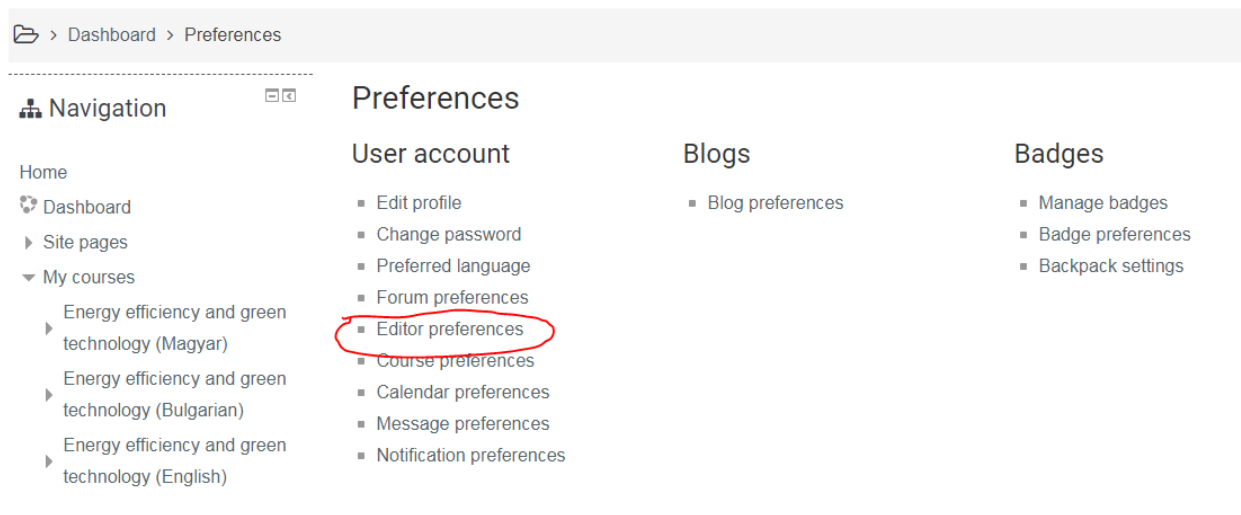
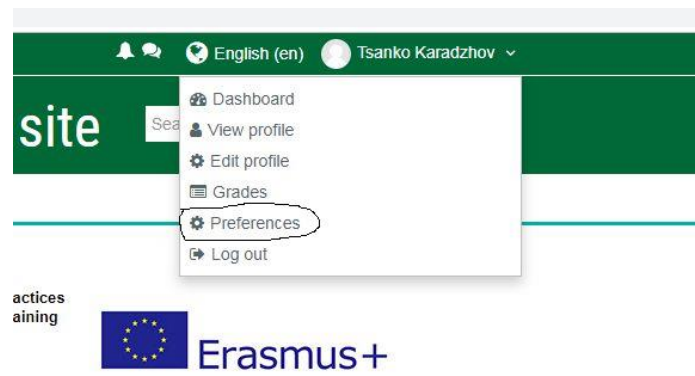
3. After selecting the file it will appear in the "Insert/edit image" window



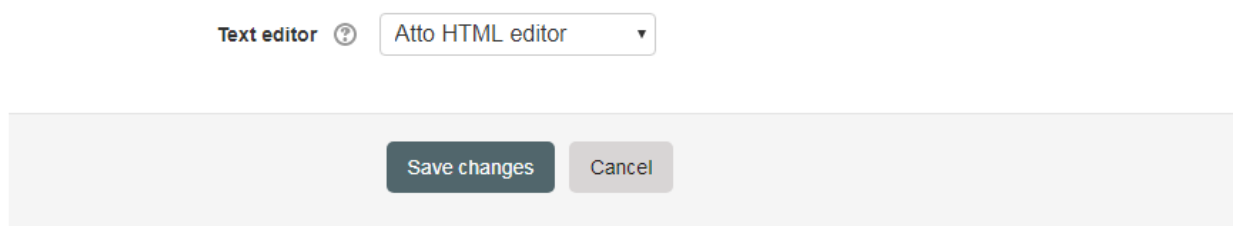
4. Insert. You will then return text editor tool.

Entering formulas in the lesson

1. To be able to enter formulas you must use Atto HTML editor.



Editor preferences



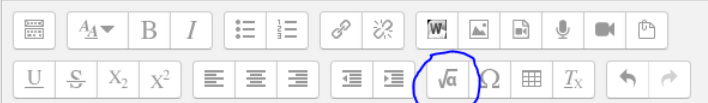
2. Inserting a formula

A formula can be inserted by using a Latex equation building in MOODLE. **TeX** is a system designed for the production of technical and scientific documentation. Although it can be used for more than just writing equations within Moodle, this document will focus on that part.

▼ Editing a content page

Page title * 1. 1. Introduction

Page contents



The location and the specific local climatic conditions of a construction area can strongly influence the energy consumption of the development. Therefore, the topographical starting point, with the different local influences, plays a role in terms of solar profitability, temperature and weather conditions. The location of the constructionsite in the area with the specific topographic initial conditions is of great importance for the later design of the construction area. For example, in terms of solar profit opportunities and weather conditions and the urban climate. The following aspects should be taken into account:

- Orientation, layout and location on site will all influence the amount of sunlight,

After clicking on the icon, a pop-up window opens that contains the visual equation editor.

Equation editor

Operators
Arrows
Greek symbols
Advanced

$\sum_{a,b}$

$\sqrt[b]{c}$

$\int_a^b c$

$\iint_a^b c$

$\iiint_a^b c$

$\oint a$

(a)

$[a]$

$\{a\}$

$|a_1 a_2 a_3 a_4|$

$\frac{a}{b+c}$

\vec{a}

$\binom{a}{b}$

$\begin{bmatrix} a \\ b \end{bmatrix}$

$\begin{Bmatrix} a \\ b \end{Bmatrix}$

Edit equation using TeX

$$$\frac{a}{b+c} \sqrt{a}{b+c}$$$

Equation preview

$$\frac{a}{b+c} \sqrt{b+c}$$


\Downarrow \)

An arrow indicates the position that new elements from the element library will be inserted.

Save equation



Below you can see that the equation has been added. You can then click save to finish the creation of the equation.

1. 1. Introduction    

The location and the specific local climatic conditions of a construction area can strongly influence the energy consumption of the development. Therefore, the topographical starting point, with the different local influences, plays a role in terms of solar profitability, temperature and weather conditions. The location of the construction site in the area with the specific topographic initial conditions is of great importance for the later design of the construction area. For example, in terms of solar profit opportunities and weather conditions and the urban climate. The following aspects should be taken into account:

- Orientation, layout and location on site will all influence the amount of sunlight, which a building receives, thus its year-round temperatures and comfort.
- Other considerations include access to views and cooling breezes.
- Orientation and layout will also be influenced by topography, wind speed and direction, the site's relationship with the street, the location of shade elements such as trees and neighbouring buildings, and vehicle access and parking.

In our climatic zone, the temperate climate, the challenge for planners is to align the building so that it captures and stores as much solar energy as possible to provide a significant portion of the heat and provide a pleasant indoor climate with passive solar use. In warmer climates, other planning criteria must be taken into account due to climatic conditions.

$$\frac{a}{b+c} \sqrt{b+c}$$

If a formula editor is not installed, an online editor can be used or the formulas can be entered directly without an editor using the following table.

Equation using Tex	Equation Preview
<code>\cdot</code>	·
<code>\times</code>	×
<code>\ast</code>	*
<code>\div</code>	÷
<code>\pm</code>	±
<code>\mp</code>	∓
<code>\circ</code>	◦
<code>\leq</code>	≤
<code>\geq</code>	≥



\sim	\sim
\approx	\approx
∞	∞
\neq	\neq
α	α
β	β
γ	γ
δ	δ
ϵ	ϵ
ζ	ζ
η	η
θ	θ
ι	ι
κ	κ
λ	λ
μ	μ
ν	ν
ξ	ξ
π	π
ρ	ρ
σ	σ
τ	τ
υ	υ
ϕ	ϕ
χ	χ

<code>\psi</code>	Ψ
<code>\omega</code>	Ω
<code>\Gamma</code>	Γ
<code>\Delta</code>	Δ
<code>\Theta</code>	Θ
<code>\Lambda</code>	Λ
<code>\Xi</code>	Ξ
<code>\Pi</code>	Π
<code>\Sigma</code>	Σ
<code>\Upsilon</code>	Υ
<code>\Phi</code>	Φ
<code>\Psi</code>	Ψ
<code>\Omega</code>	Ω

E-BOOK

In the modules the most part of the learning materials is stored in **electronic book format**. This solution has advantages for the participants: they like it because all the reading materials are held in a single place in a printable format. Books can contain media files as well, pictures, videos; animations can be embedded into the textual.

In the course you find several books in each module: click “Module 2 Active and healthy ageing” on the navigation bar, and inside the module click the title “Active and healthy ageing.” You see a small book-icon at the left side of the title, what shows, that this course component is an electronic book.

NAVIGATION IN THE BOOK

The books have main chapters and sub chapters, and you can walk among the chapters by clicking the titles in the table of content.

2.1 DATA SOURCES AND DATABASES

Information and communication technologies (ICT) are changing at a rapid pace, and they obviously have an effect on how agriculture is developing. However, therefore, information management is becoming an increasingly challenging task for farmers, particularly in terms of the amount of data collected and the complexity of processes at the heart of farming.

Collecting the data from the many data sources (e.g. IoT devices, tractors, labour, management, etc.) presents one of the key challenges in digital agriculture. Data sources can differ widely, according to applications or the mechanisms of observation.

Software systems for agriculture can have multiple data sources depending on their purpose or function. Many applications, and most web sites, will rely on data being stored in a database management system, and link to these as their primary data sources. Various hardware systems, such as input devices and sensors, may use the environment as the primary data source.

Definitions

In computing a data source is the location of the data that is being used within a system or application. Typically data source is the database, and this can be located locally on a computer disk or remotely on some server (e.g. on the

TARTALOMJEGYZÉK

- Introduction
- 1. Agriculture 4.0
 - 1.1 What is Agriculture 4.0?
 - 1.2 Trends in Agriculture 4.0
 - 1.3 Challenges
- 2 Data Sources
 - 2.1 Data Sources and Databases
 - 2.1.1 The importance of data for the farming business
 - 2.1.2 Data Streams
 - 2.2 Sampling
 - 2.2.1 Types of Sampling
 - 2.2.2 Soil Sampling
 - 2.2.3 Soil sampling methodologies,

You can move among the “book pages” by using the table of content at the left side, or by clicking one of the small rectangles at the right corner, if you want to go ahead or back page-by-page in the content.

MEDIA ELEMENTS INTEGRATED INTO THE E-BOOKS

Embedded video in the book

It was also a problem that earlier apps although collected these data but stored this important information separately. Although we could see how much we had slept according to *Sleep Cycle* app, or how much and how fast we have move according to *Nike Running* application but since this information has been collected at a central location on the phone, we can get a much clearer picture of how we stand with our health. Since the iPhone 5s series has a motion tracking coprocessor in the devices, you can still see these data, even when you've forgotten to turn on your running app during sports activities. The cell phone is with us in most cases, so at the end of a day, we can see how many steps we had taken that day when the device was in our pocket.

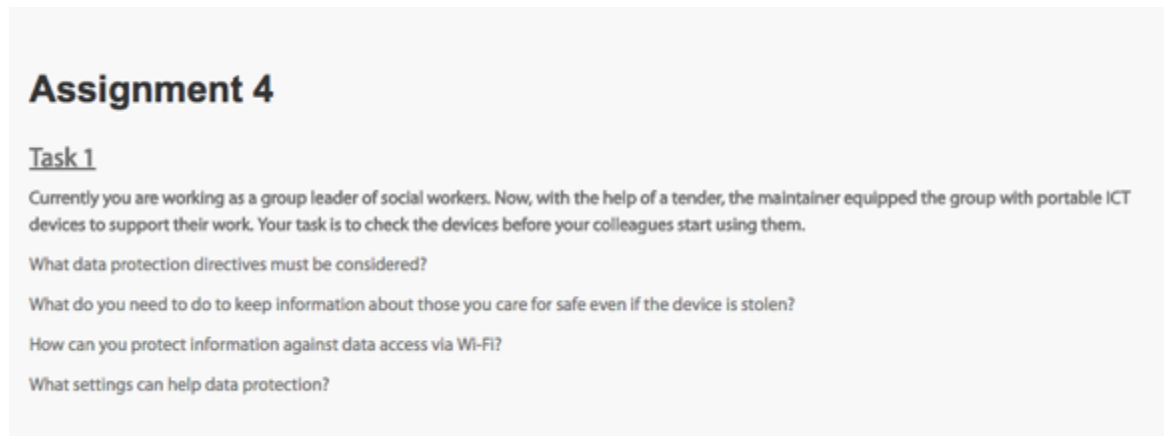


ASSIGNMENTS

The assignment provides a space into which participants can submit work for teachers to grade and give feedback on. This saves on paper and is more efficient than email. It can also be used to remind students of 'real-world' assignments they need to complete offline, such as art work, and thus not require any digital content.



Student submissions are together on one screen of your course. You can require them to submit one or several files and/or to type text essays. It is possible to have them submit work as a group and you can also choose as a teacher to grade their work 'blind' in other words not to see the identities of those who have submitted assignments. Assignments can have deadlines and cut off dates - which you can also extend if necessary. An example:

A screenshot of a Moodle assignment page. The title is "Assignment 4". Below it is "Task 1". The task description reads: "Currently you are working as a group leader of social workers. Now, with the help of a tender, the maintainer equipped the group with portable ICT devices to support their work. Your task is to check the devices before your colleagues start using them." There are four questions listed below: "What data protection directives must be considered?", "What do you need to do to keep information about those you care for safe even if the device is stolen?", "How can you protect information against data access via Wi-Fi?", and "What settings can help data protection?".

The students can solve the assignments on different method, defined by the teacher. They can be asked to upload a document, or to answer the questions online by using the same editor what you use for forum messages. When the participants submitted the assignments, the teachers can evaluate them one-by-one, and the student will receive an e-mail with the credits and the textual evaluation of the teacher.

In Moodle all activities can be scored. The teachers can set the maximum score when you define the activities. The tests' evaluation and scoring are done automatically; for other activities there is a need for the teacher or the tutor to do the assessment. Points awarded for each activity are shown in a table.

GUIDE FOR TEACHERS TO EVALUATE

Enter the Assignment you would like to evaluate. In a teacher role you will find the **Grading Summary**. Click on the *View all submissions* button to proceed.

Assignment 4

Task 1

Currently you are working as a group leader of social workers. Now, with the help of a tender, the maintainer equipped the group with portable ICT devices to support their work. Your task is to check the devices before your colleagues start using them.

What data protection directives must be considered?

What do you need to do to keep information about those you care for safe even if the device is stolen?

How can you protect information against data access via Wi-Fi?

What settings can help data protection?

Method of submission:

Complete each task by using in the attached Word template. Whenever appropriate, demonstrate that you can adjust the relevant settings by uploading relevant screenshots.

Evaluation criteria:

Task 1

Knowledge of data protection acts and laws 10 points

Correct application of physical protection and password verification 15 points

Security and dangers of Wi-Fi 15 points

Grading summary

Participants	3
Submitted	1
Needs grading	1
Due date	Saturday, 7 July 2018, 12:58 PM
Time remaining	60 days 23 hours

[View all submissions](#) [GRADE](#)

It is worth to sort the records by Status so that you see those course participants on the top who already submitted their assignments for grading.

Assignment 4

Grading action: Choose...

Reset table preferences

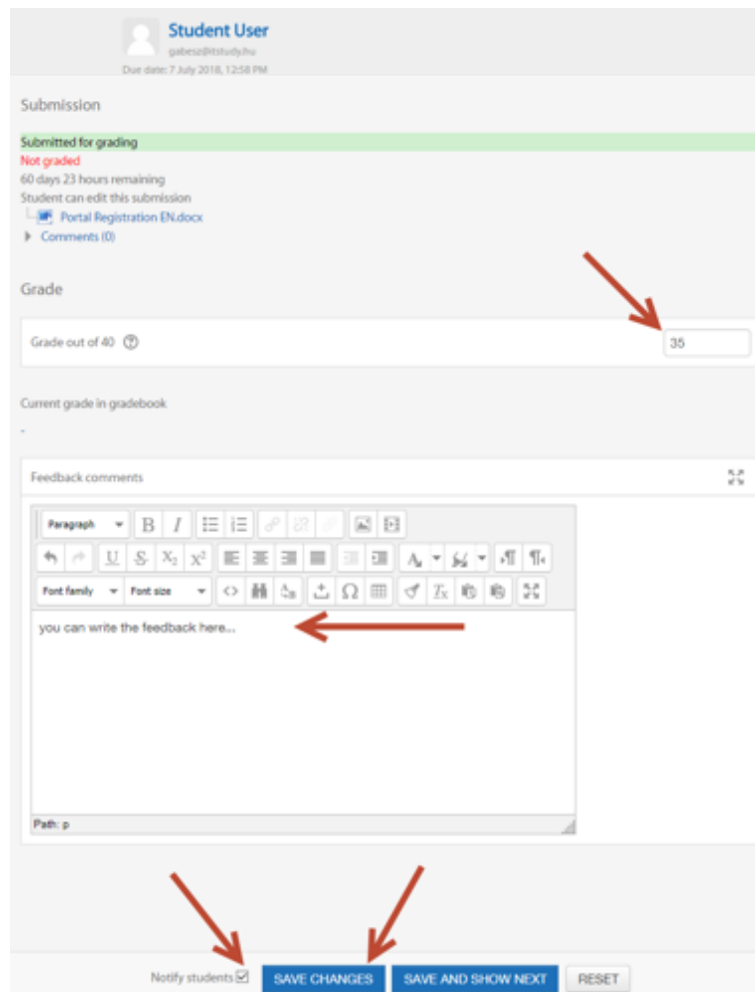
Select	User picture	First name / Surname	Email address	Status	Grade	Edit	Last modified (submission)	File submissions	Submission comments	Last modified (grade)	Feedback comment
<input type="checkbox"/>		Student User	gabesz@itstudy.hu	Submitted for grading	GRADE	Edit	Monday, 7 May 2018, 12:32 PM	Portal Registration EN.docx	Comments (0)	-	-
<input type="checkbox"/>		Anita Tóring	anita.toring@prompt.hu	No submission	GRADE	Edit	-	-	Comments (0)	-	-
<input type="checkbox"/>		Gabriella Hajdú	hajdu.gabriella@oveges-szu.hu	No submission	GRADE	Edit	-	-	-	-	-

With selected... Lock submissions [GO](#)

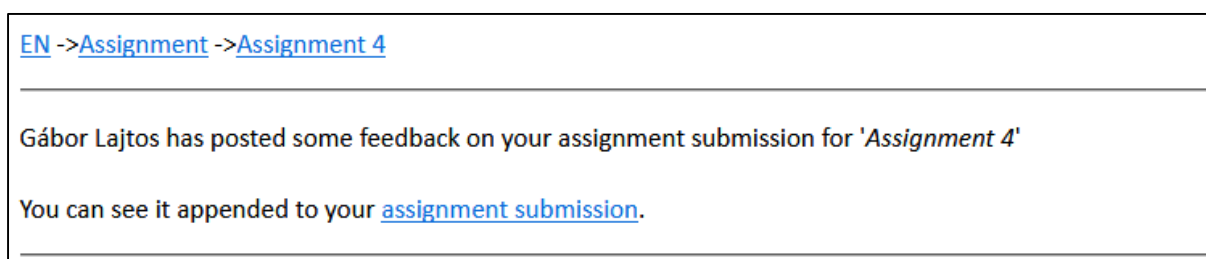
Open the file and next to the name read through and evaluate it according to the pre-defined and published criteria. By clicking on GRADE button, you can enter the grade, and you can add written feedback as well. We suggest doing that in each case.



The student is notified about the grading, if you tick the relevant box at the bottom. Save changes, and you are ready.




The student will receive an e-mail like this about the grading:



If the student enters the platform, he/she will see the feedback and grade:


Submission status

Submission status	Submitted for grading
Grading status	Graded
Due date	Saturday, 7 July 2018, 12:58 PM
Time remaining	60 days 23 hours
Last modified	Monday, 7 May 2018, 12:32 PM
File submissions	 Portal Registration EN.docx
Submission comments	▶ Comments (0)

[EDIT SUBMISSION](#)

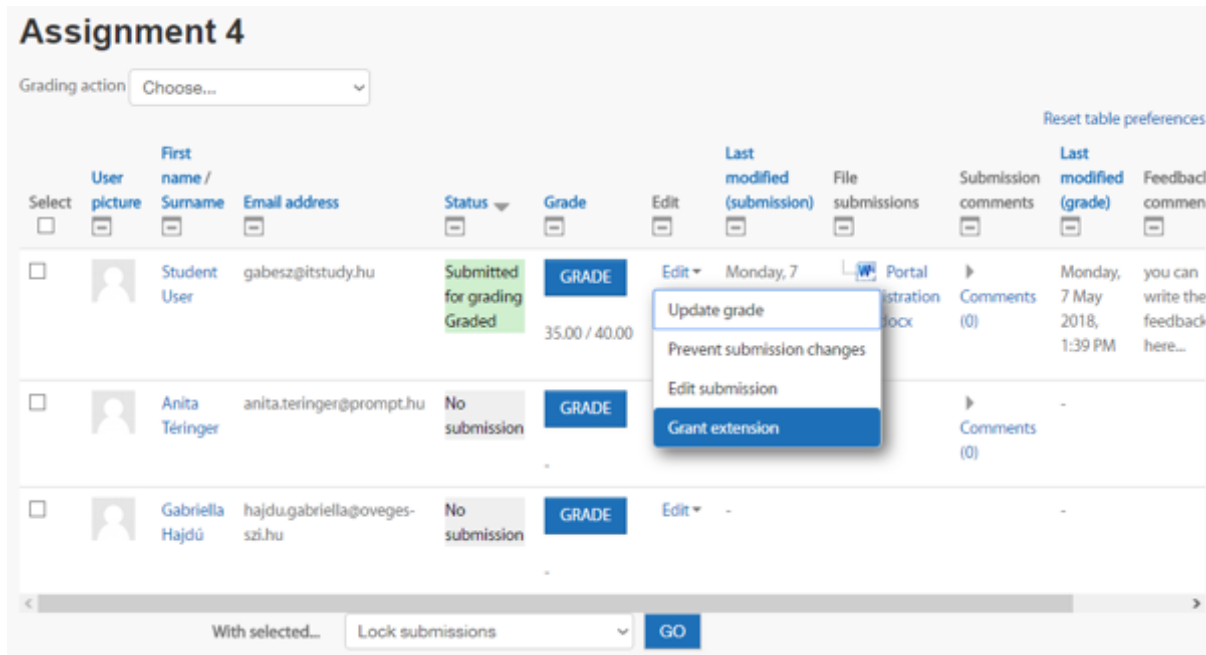
You can still make changes to your submission

Feedback

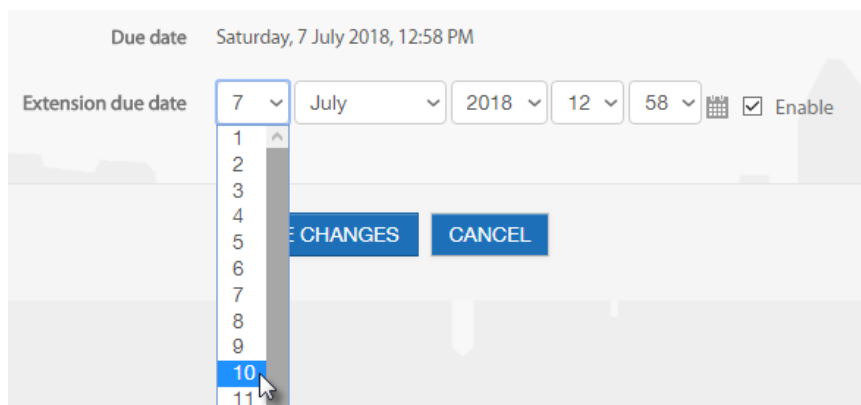
Grade	35.00 / 40.00
Graded on	Monday, 7 May 2018, 1:25 PM
Graded by	 Gábor Lajtos
Feedback comments	you can write the feedback here...

EXTENSION OF SUBMISSIONS

If an extension for submission is approved, we enter the assignment whose submission date we want to prolong for selected students. Next to the name we click on Edit, and from the drop-down menu we choose: *Grant extension*.



We set the new deadline for submission:



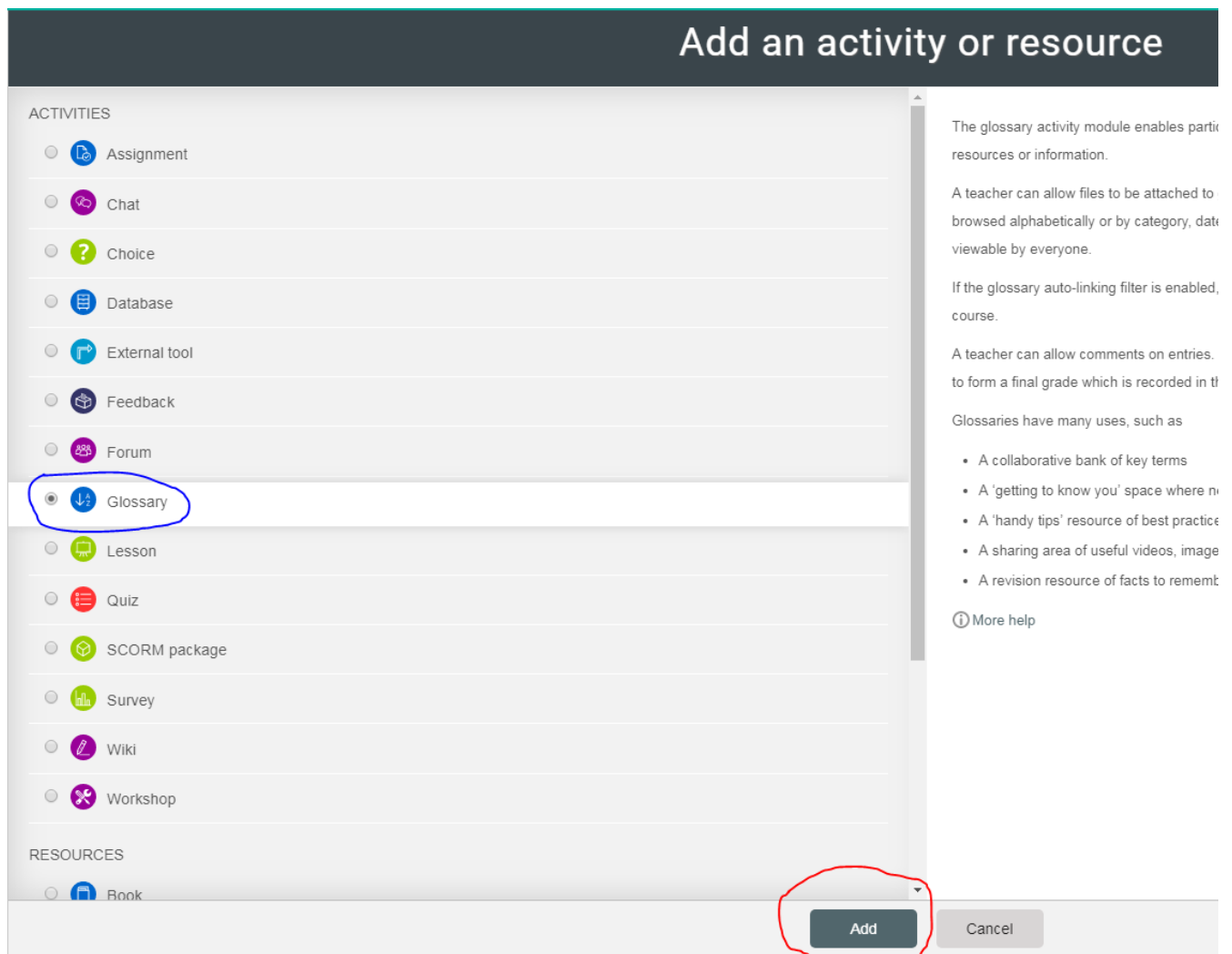
GLOSSARY

Experts in a certain scientific field - for example computer science - create new languages, new words, new vocabulary of acronyms, names, etc. that we see and use every day. We might not know what these mean exactly, so students studying these fields can consult glossaries of definitions to avoid misunderstandings.

The Glossary in Moodle is a powerful tool for learning. The Glossary is much more than a normal vocabulary: terms and their definitions can be linked, and site wide glossaries can be used over the whole portal so that definitions can always be reached.

The great advantage of the glossary is that teachers and students are able to develop a shared vocabulary list together. Entries and definitions can be graded and added to the final grade.

1. Adding a glossary



Add an activity or resource

ACTIVITIES

- Assignment
- Chat
- Choice
- Database
- External tool
- Feedback
- Forum
- Glossary
- Lesson
- Quiz
- SCORM package
- Survey
- Wiki
- Workshop

RESOURCES

- Book

The glossary activity module enables participants to add resources or information.

A teacher can allow files to be attached to glossary entries, which can be browsed alphabetically or by category, date, or viewable by everyone.

If the glossary auto-linking filter is enabled, the system will automatically link to the course.

A teacher can allow comments on entries, which can be used to form a final grade which is recorded in the system.

Glossaries have many uses, such as

- A collaborative bank of key terms
- A 'getting to know you' space where participants can introduce themselves
- A 'handy tips' resource of best practice
- A sharing area of useful videos, images, or documents
- A revision resource of facts to remember

[More help](#)

Add **Cancel**

2. Adding a glossary entry:

To add a glossary entry click the "Add a new entry" button in the center of the screen

Glossary

[Print](#) Search full text

Browse the glossary using this index

Special | [A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#) | **ALL**

▼ General

Concept *

Definition *

Rich text editor toolbar with icons for text formatting (bold, italic, underline, strikethrough, subscript, superscript), lists, links, unlink, insert link, insert image, insert video, insert audio, insert table, insert table of contents, undo, redo, and other editing tools.

Large empty text area for entering the definition.

Keyword(s) 

This entry should be automatically linked

If the Glossary auto-linking filter is enabled, and 'This entry should be automatically linked' is set to "yes", the entry will be automatically linked wherever the concept or keyword appear within the same Moodle course.

ADDING A QUIZ

The Quiz activity module allows the teacher to design and build quizzes consisting of a large variety of Question types. These questions are kept in the Question bank and can be re-used in different quizzes.

Add an activity or resource

ACTIVITIES

- Assignment
- Chat
- Choice
- Database
- External tool
- Feedback
- Forum
- Glossary
- Lesson
- Quiz**
- SCORM package
- Survey
- Wiki
- Workshop

RESOURCES

- Book

The quiz activity enables a teacher to create quizzes comprising questions of various types, including multiple choice, matching, short-answer and numerical.

The teacher can allow the quiz to be attempted multiple times, with the questions shuffled or randomly selected from the question bank. A time limit may be set.

Each attempt is marked automatically, with the exception of essay questions, and the grade is recorded in the gradebook.

The teacher can choose when and if hints, feedback and correct answers are shown to students.

Quizzes may be used

- As course exams
- As mini tests for reading assignments or at the end of a topic
- As exam practice using questions from past exams
- To deliver immediate feedback about performance
- For self-assessment

[More help](#)

Add Cancel



1. Add a question to the quiz

Editing quiz: Test 3

Questions: 6 | This quiz is open

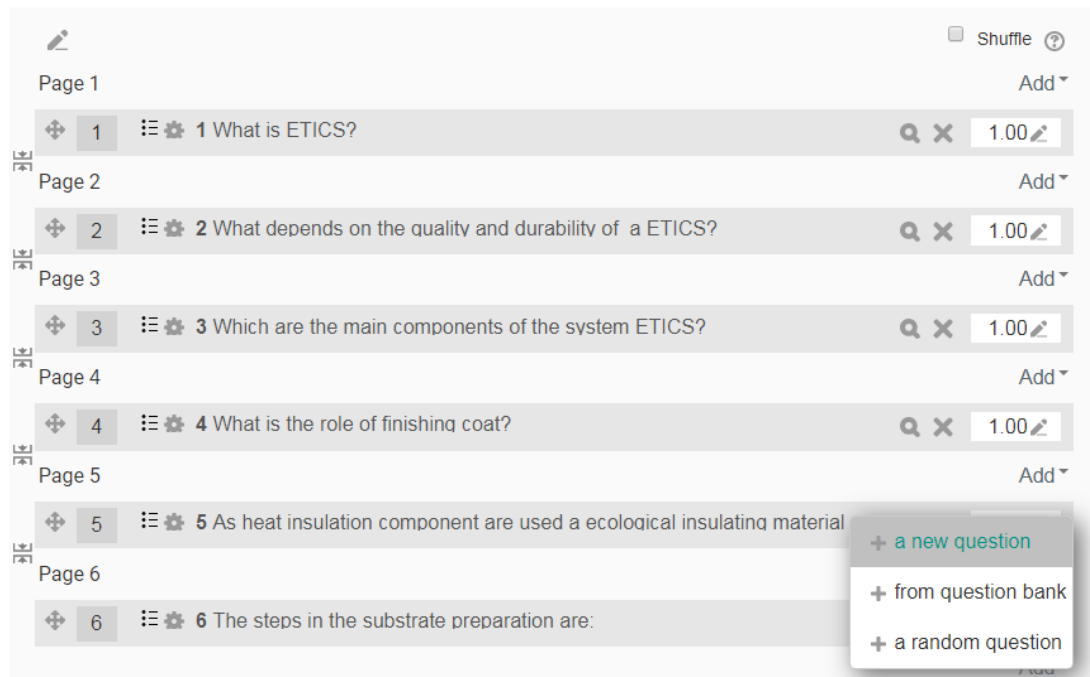
Maximum grade 10.00

Save

Repaginate

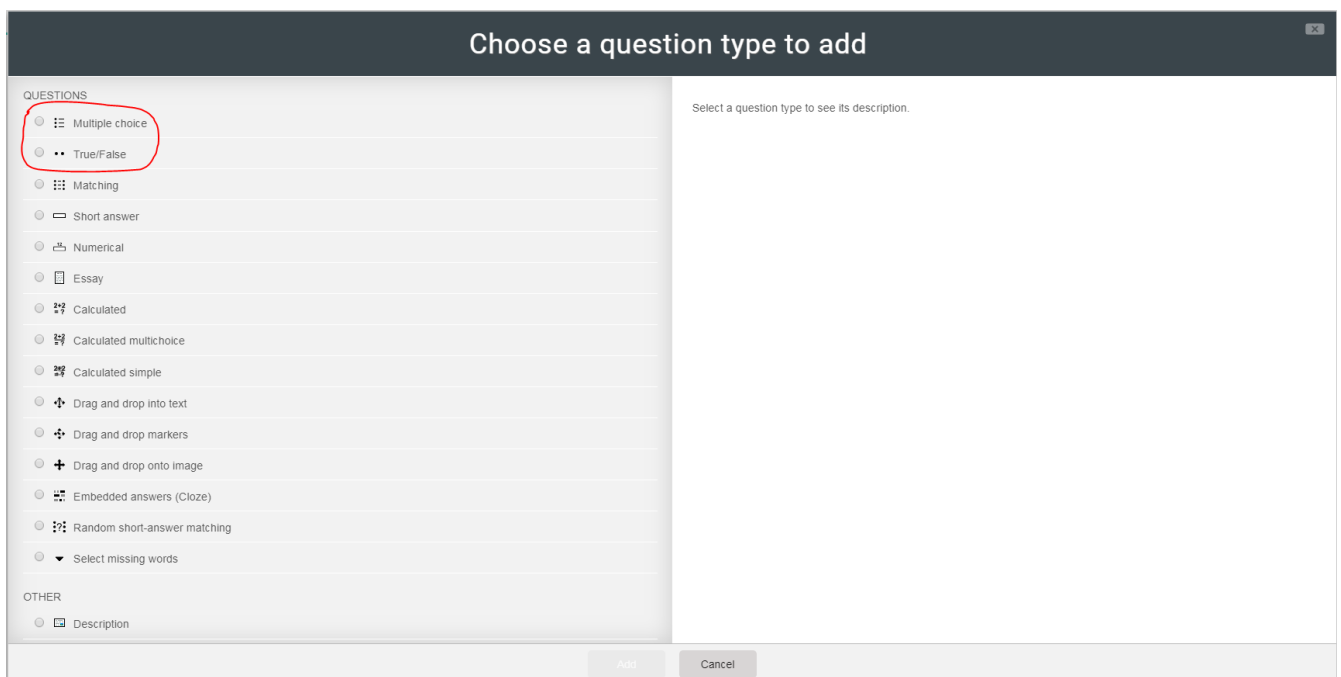
Select multiple items

Total of marks: 6.00



The screenshot shows a quiz editor interface with a list of 6 questions across 6 pages. Each question entry includes a question number, a question title, and a grade of 1.00. A dropdown menu is open over the 5th question, showing three options: '+ a new question', '+ from question bank', and '+ a random question'. The interface also includes a 'Shuffle' checkbox, 'Add' buttons for each page, and 'Repaginate' and 'Select multiple items' buttons at the top.

2. Choose a question type to add (The first two options are most often chosen)



The screenshot shows a dialog box titled 'Choose a question type to add'. On the left, there is a list of question types under the heading 'QUESTIONS'. The first two options, 'Multiple choice' and 'True/False', are circled in red. Other options include Matching, Short answer, Numerical, Essay, Calculated, Calculated multichoice, Calculated simple, Drag and drop into text, Drag and drop markers, Drag and drop onto image, Embedded answers (Cloze), Random short-answer matching, and Select missing words. Under the heading 'OTHER', there is an option for 'Description'. On the right side of the dialog, there is a text prompt: 'Select a question type to see its description.' At the bottom, there are 'Add' and 'Cancel' buttons.



HANDLING USERS

Operations related to users can be found in the **Administration** block, **Users** option.

LIST OF ENROLLED USERS

Administration → **Users** → **Enrolled users**

Number of participants: 15

First name A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Surname A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Select	First name	Surname	Email address	Roles	Groups	Last access to course	Status
<input type="checkbox"/>	[Avatar]	[Name]	[Email]	Teacher	No groups	Never	Active ⓘ ⚙ X
<input type="checkbox"/>	[Avatar]	[Name]	[Email]	Teacher	No groups	Never	Active ⓘ ⚙ X
<input type="checkbox"/>	[Avatar]	[Name]	[Email]	Teacher	No groups	Never	Active ⓘ ⚙ X
<input type="checkbox"/>	[Avatar]	[Name]	[Email]	Teacher	No groups	Never	Active ⓘ ⚙ X

MANUAL ENROLMENTS

If manual enrolment is chosen, the teacher can add users one by one to the course. This method involves more work, but makes the process more controllable.

Above the list of users, click on **Enrol users**, then

1. search for the user;
2. select a role;
3. click on **Enrol selected users and cohorts**.

We can repeat the process in case of more users, without having to close the window.

Participants

No filters applied

Search keyword or select filter

Enrol users

Number of participants: 15

First name **All** A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Surname **All** A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Select	First name ▲ / Surname	Email address	Roles	Groups	Last access to course	Status
<input type="checkbox"/>	[Profile icon]	[Email]	Teacher	No groups	Never	Active ⓘ ⚙️
<input type="checkbox"/>	[Profile icon]	[Email]	Teacher	No groups	Never	Active ⓘ ⚙️

Enrol users

Enrolment options

Select users No selection

Search **1**

Select cohorts No selection

Search

Assign role

Student **2**

Non-editing teacher

Student

3

Enrol selected users and cohorts

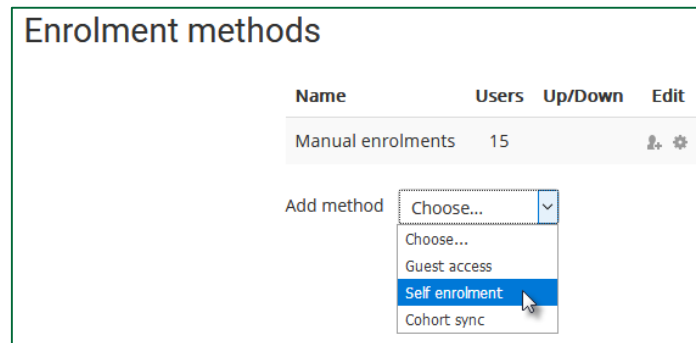
Cancel

SELF-ENROLMENTS

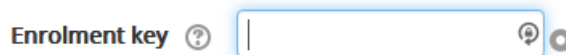
In case of self-enrolment we allow users to join the course themselves. This method requires less effort, but controlling the process is more difficult.

Administration → **Users** → **Enrolment methods**

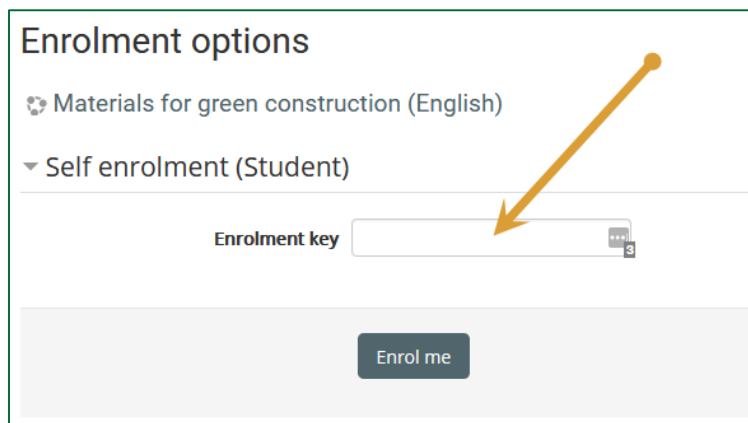
1. From the **Add method** list, select the **Self-enrolment** option;



2. Specify an enrolment key.



The system will require the users to provide the enrolment key when they first log in to the course.



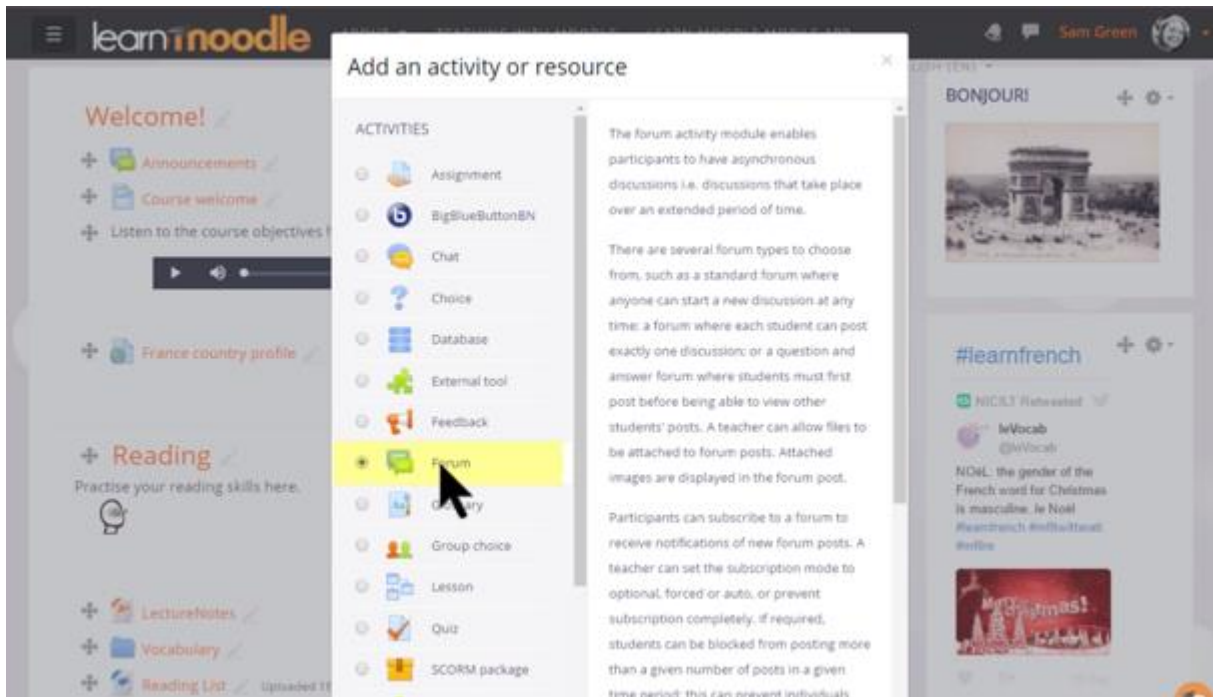
COMMUNICATION WITH THE STUDENTS ON FORUMS

FORUM



The forum activity allows students and teachers to exchange ideas by posting comments as part of a 'thread'. Files such as images and media maybe included in forum posts. The teacher can choose to rate forum posts and it is also possible to give students permission to rate each other's posts.

Let's see a video on how to use the forum:





https://www.youtube.com/watch?time_continue=11&v=3M7G9aJVGy0

In the block of **General** the participants find basic information about the course and a General Forum for asking general, technical and administrative questions.

ENTER THE FORUM, READ THE POSTS

Before entering the forum, some information is visible about the forum. On the left side the forum name is visible, which is clickable and forwards the user to the forum. The second column displays how many topics were posted in this forum. The Posts column shows the number of total posts in this forum. The last column displays the author of the latest post and when it was posted

Forum			
Add a new discussion topic			
Discussion	Started by	Replies	Last post
Introduction of the participants	 Mária Hartyányi	0	Mária Hartyányi <input type="checkbox"/> Wed, 27 Mar 2019, 12:25 PM
Technical issues	 Mária Hartyányi	0	Mária Hartyányi <input type="checkbox"/> Wed, 27 Mar 2019, 12:25 PM

By clicking the name of the forum, you will see the topics and after clicking a topic you will be able to read the posts, you can add a new post as well.

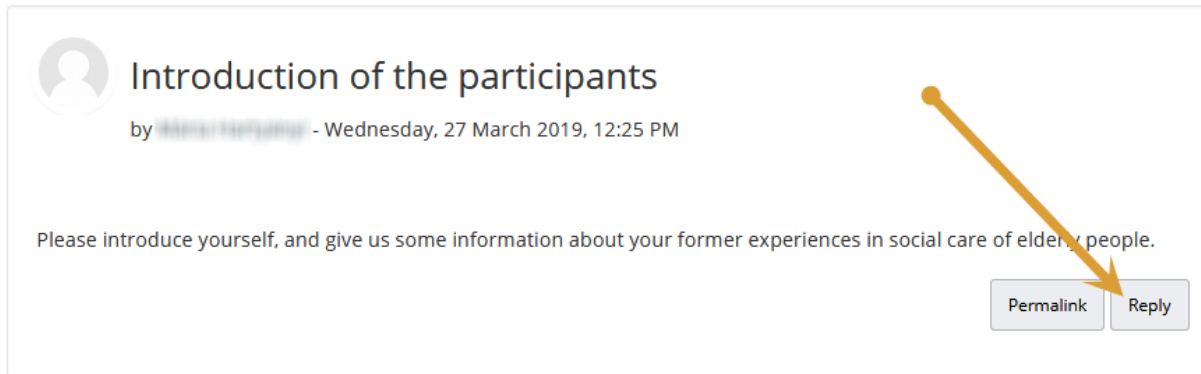
The forum topic is the place where the communication takes place. After entering a topic, the title will appear. Below it there is the date when it was published and the author. The text below the date



is description about the topic. Underneath there are some links “forums”, “tags” and “subscription”. You can attach documents or any digital content to your posts.

ANSWERING A POST

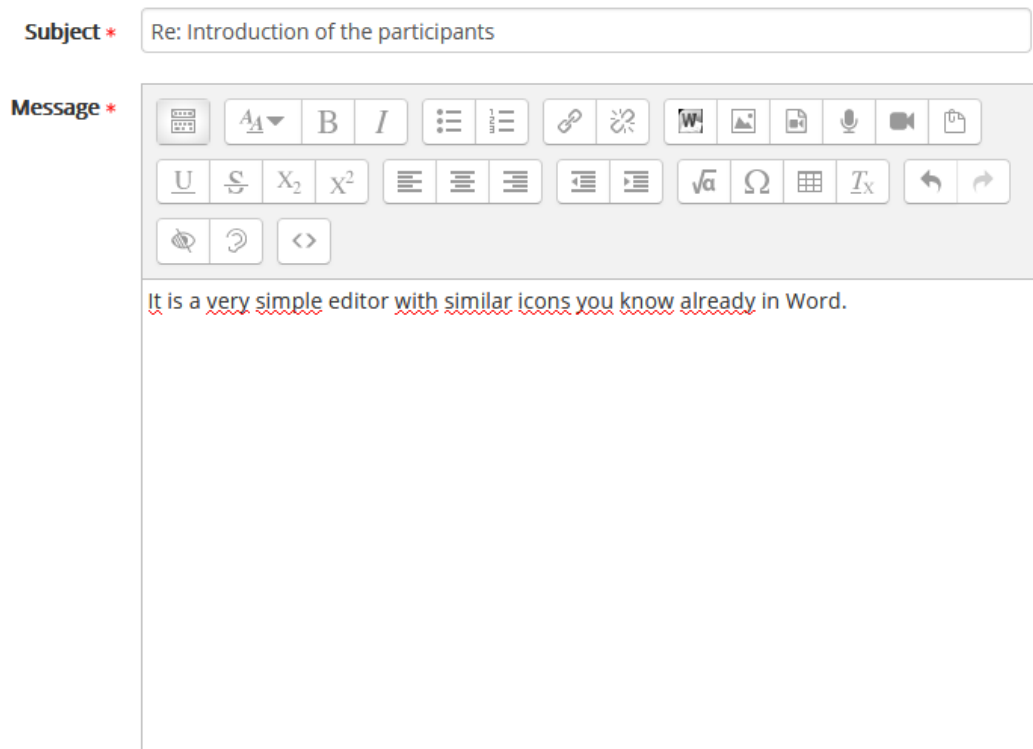
If you want to answer a post of other participant, you have to click the Reply button below the description of the topic.



The forum posts are similar to the structure of the e-mail, but here it is obligatory to fill in the **Subject** and **Message**, while to attach a document is optional.

WRITING A MESSAGE BY USING THE EDITOR

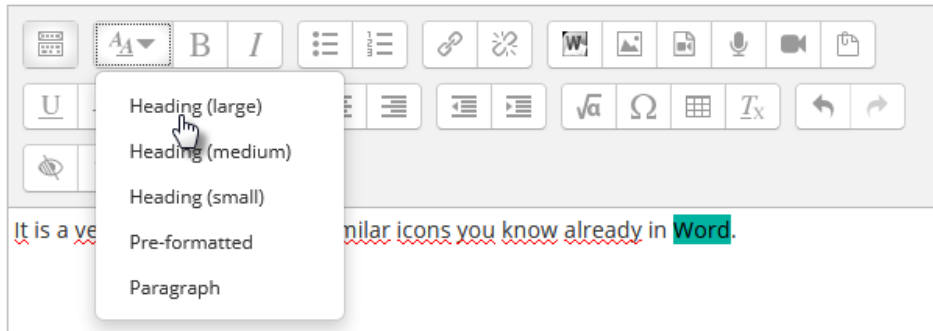
When you start to write a post, a new window will open with series of icons to edit, format your text.



These are some basic text handling tools which might be already familiar from Word or any other text processing software. You can “cut”, “copy”, “paste”, “paste as plain text” or “paste from word”.

If you have already written your text in a Word document, you just have to paste it with this tool.

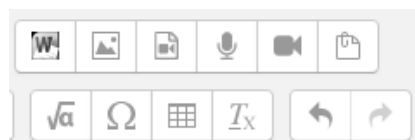
You might be familiar with the basic formatting icons, like below for giving special Heading 1, 2, 3 styles to the selected paragraph.



In the first row find the typical formatting icons for changing the style of the fonts to bold, italic, ..., creating numbered or bulleted lists, inserting hyperlinks, pictures.

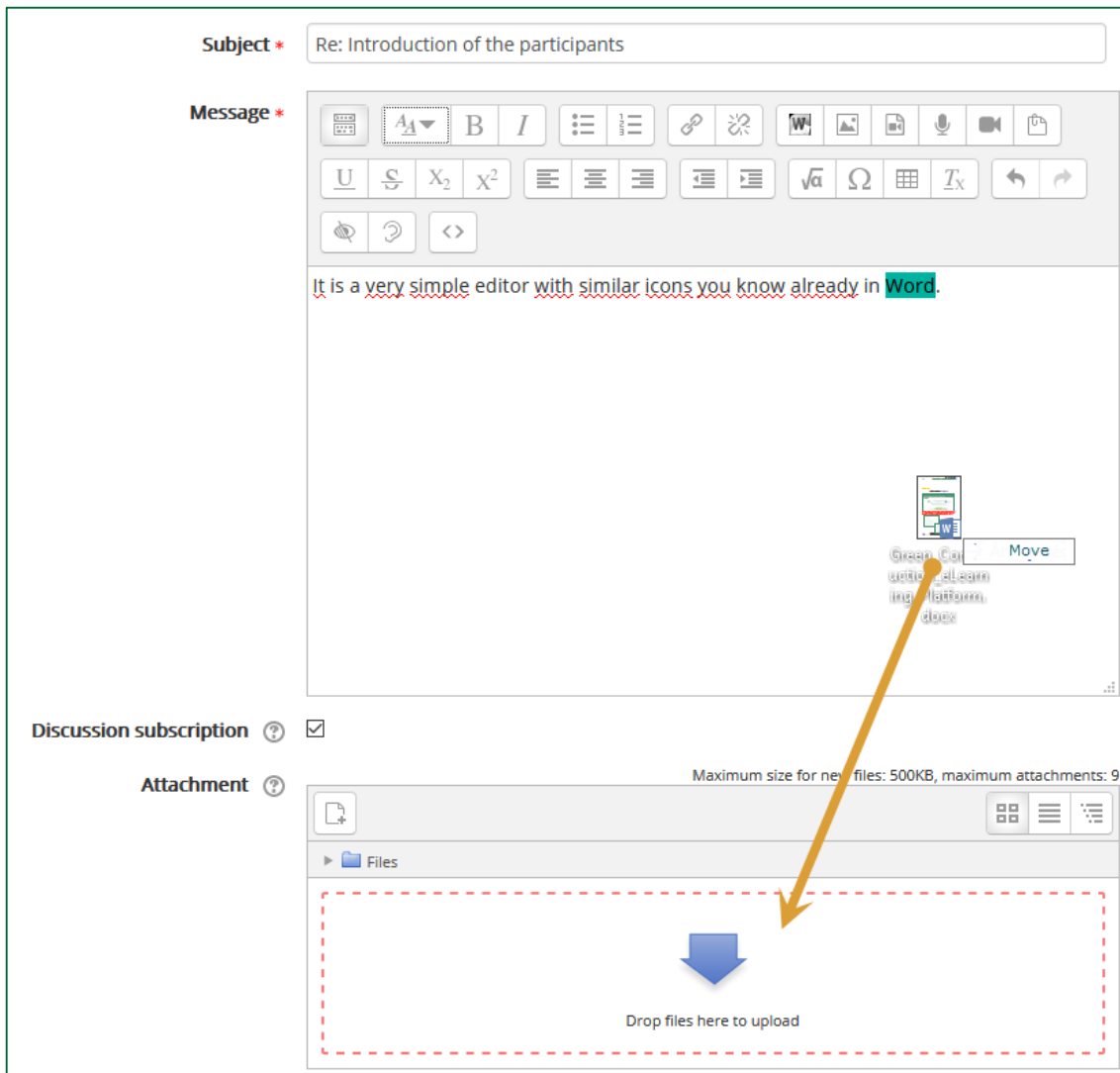


However, you have to be aware, that this text will be stored in so called HTML format, what is a special format for text publishing on the web. That is while there are several special tools among the icons, like below, which are not used in Word.

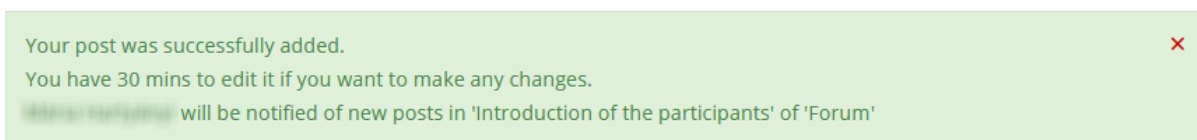


In you click the first at the left, the text will change to a very strange code – don't worry about it, click again, and you will see again the text. If you move the mouse cursor below the icons, you can read the name of the icon.

You will not need all them for writing a simple forum message, but they are very useful for editing learning contents.

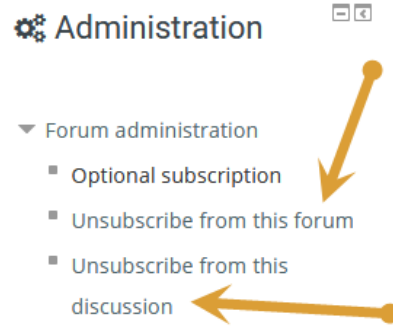


When you click the **POST TO FORUM** button below the message, then you will see at once your completed text message, but you have **30 minutes** to correct, to modify your text, then the system will send an e-mail automatically to all participants who are subscribed to this forum.



E-MAIL OF THE MESSAGE.

Why will you get e-mail about the forum messages? This is a setting in the e-learning system, chosen by our system administrator because we think that option is useful. If this option is checked, you need not to visit the site to see whether there are new messages or not. You can read the messages in your e-mail. However, if the e-mails would bother you, you can unsubscribe from the forum in the left block, called ADMINISTRATION.



ADDING NEW TOPIC TO THE FORUM

You can start a new forum topic, if you want, by clicking the button at the top of the forum. However, please pay attention: do it only if there aren't similar topic opened before! Otherwise the discussion will be too fragmented, and it will be very difficult to follow the stream.

Forum

Add a new discussion topic

Discussion	Started by	Replies	Last post
Introduction of the participants	Mária Hartyányi	0	Mária Hartyányi Wed, 27 Mar 2019, 12:25 PM
Technical issues	Mária Hartyányi	0	Mária Hartyányi Wed, 27 Mar 2019, 12:25 PM

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