



Erasmus+



Newsletter 2022

MOOC4ALL - From Massive Open Online Course to Practice for Environmental-, Nature- and Climate Protection with 4 Consortium Countries

Project duration: 15.10.2019-14.04.2022.

Project number: 2019 -1-DE02-KA204-006106

Project acronym: MOOC-2-Prac-4-UNAKLIM

Five partners from four countries (Germany, Poland, Hungary and Romania) worked together for 3 years to develop this online course in the environmental field. The topics are related to environmental protection and sustainable development. In addition to the pure online course, "blended learning" exercises and a concept are developed.

Dear readers, welcome to our newsletter.

We would like to show you the important progress we have made in the development of our digital Massive Online Courses (MOOCs) on the environment and renewable energy. The idea for this course was born long before the Corona epidemic. In the meantime, it has become even more useful and necessary to train and work with participants in a digital or hybrid way. Even before Corona, digital technologies were an ongoing theme in vocational education and training, including in schools and adult education. However - it is only in the last 1.5 years that it has become apparent that many of these plans were simply - plans! If it had not been for the need and expectation to develop them more quickly to replace personal learning environments, we would not be here today.

Project results:

1. MOOC courses - 4 original environmentprotection curricula - we created original containts of 4 courses of 4 different environment topic
2. Handbook - we collected the 4 MOOC courses lectures, field excercises, toolkits, excercises, literatures
3. Train the Trainers (TTT) - we created the concept of TTT for the trainers
4. Digital Tools for OnlineTeaching and Learning - we summarise the different digital methods and platforms what we use in the MOOC courses
5. Multiplier Events - we shared the our experiences of the project



1. MOOC COURSES

Waste management

Soil protection

Chemicals, Health and Security

The Waste MOOC – K – I – D – E – P Method* (*Knowledge Input-Discuss-Experiment-Practice)

What we do:

In cooperation of five partners from four countries (Germany, Hungary, Poland, Romania), we design a digital European educational concept and a MOOC=Massive Open Online Course on environmental topics

Our Goals:

- Enhance digital learning
- Enhance easier access to knowledge
- Give new and transversal knowledge
- Enable participation in remote areas
- Create international networks
- Reduce misfits between knowledge and market demands
- Create new expert knowledge
- Design EU-wide standardized education

Our Outputs:

- MOOC Concept: Open / online / digital education
- Massive Open Online Course (MOOC)
- New Training Concept and Tool Kit specific for MOOC
- Concept of the Train-The-Trainer Course for the MOOCs
- Blended Learning Units for practical field and laboratory exercises

No	Title	Knowledge Input (Key Words)	Discuss (Critical Thinking)	Experiment & Practice
1	How much waste do we produce?	Statistics in European countries, Decoupling of waste amount and commercial development	What is behind the numbers? How shall we read statistics?	Field exercises, own research and discussion
2	Close Cycle Management Law - Intro	Definition Waste, Waste treatment	Why is the waste definition so strange?	Waste questionnaire
3	Close Cycle Management Law - Product responsibility	Waste Life Cycle, who is responsible what to do with the waste	How to reduce waste, sustainable shopping, zero waste	Field exercises, own research and discussion
4	European Waste Catalogue	Waste origin, dangerous waste, mirror entries, multiple entries	Why are there multiple entries, why the danger potential not the first priority?	Waste categorisation exercise, waste optimising
5	Waste separation	Categorisation, waste tons and bags	How to optimise your waste, to make it cheapest, zero waste possible?	Waste categorisation exercise, waste optimising
6	The Green Dot	Green Dot, Pro Europe, licence payments	Illogical licence payments, unjust procedures	Field exercises, own research and discussion
7	Chemical Law	Potential dangers, goal	Difficulties, labeling	Complex exercises
8	Ordinance on hazardous substances - Introduction	What is hazardous, threshold values, protection of workers	Are the threshold values logical? definitions and implications	Complex exercises
9	Ordinance on hazardous substances - Safety	Safety Data Sheets, H-P-Statements, Globally harmonised Systems GHS, Risk symbols	How to find and handle the data in accident cases	Complex exercises
10	Soil Law - Introduction	Definitions, soil versus waste	Why is the soil definition so important with respect to waste?	Soil versus Waste, Quiz film
11	Soil Law - Responsibilities	Responsibilities, waste owner, waste producer	Trace back to the responsible soil polluter, search where and how	Complex exercises
12	Soil Law	Soil sampling logics, HCl, water near or not, clay, sand, implications to pollution	Soil assessment	Field exercises, own research and discussion
13	Soil sampling film	Soil sampling logics, equipment	Does the soil assessment logic helps to find contaminations?	Field exercises, own research and discussion
14	Story of a yoghurt pot	Plastic, danger, avoidance	Can we live without plastic, who could do it, is it costly, how to do it, look beyond your life span	Field exercises, own research and discussion
15	Waste Quiz	Soil versus waste	Are there logics? Why yes, why not, why could it be so?	Field exercises, own research and discussion
16	Waste Pyramid	"Good" waste versus "bad" waste	Life on zero waste? Zero waste and economic growth - an utopia?	Own research and discuss in groups

Principle:

The MOOC parts must build on one another, they must follow a strict logical frame, a „Red Thread“, the learners must feel this logic and must be able to find and explain important issues on their own, using that concise logic. Knowledge input, structured discussion must be induced by the MOOC design. In the theoretical and the field exercises, the learners must be enabled to find critical issues and act on their own. The curiosity for the next learning unit must be kept awake.



Susanne Rahner
Kraków 17.6.2021



MOOC 4 ALL - Funded by European Commission, Scheme ERASMUS Plus Strategic Partnership, Contract No 1 DE02 KA 204-006 106

Geothermal energy

Geothermal Energy MOOC Lesson 1 - Introduction to Course

Introduction | Topic 1 | Topic 2 | Topic 3 | Final Test

Course Syllabus

1: Geothermal Energy

- Lesson 1: Earth heat and geology
- Lesson 2: Geothermal Energy Utilization
- Lesson 3: Deep Geothermal
- Lesson 4: Shallow Geothermal
- Lesson 5: Worldwide utilization potential and best-practices

2: Power Generation, District Heating, Air condition and Cooling

- Lesson 6: Concept and Components of Power Generation, District Heating and Cooling Systems
- Lesson 7: Basic of heat pumps, air conditioning and cooling
- Lesson 8: Calculation of energy prices and cost effectiveness
- Lesson 9: Investments, operating costs, costs of current production, efficiency
- Lesson 10: Case studies and references installations (world best-practices)

3: Environmental Impact of Geothermal use in energy systems

- Lesson 11: Environmental Impact of geothermal exploration
- Lesson 12: Environmental Impact of Geothermal energy utilization
- Lesson 13: Environmental Impact of District Heating and Cooling Projects
- Lesson 14: Management of spent geothermal waters
- Lesson 15: Best-practices of using geothermal energy and water

Prof. D. Sc. Eng. Barbara Tomaszewska
M. Sc. Aleksandra Kasztelewicz
M. Sc. Eng. Magdalena Tyszer



Mineral and Energy
Economy Research
Institute
Polish Academy of Sciences



Solar energy

The Solar Energy

Course content:

- The structure, age, operation of the Sun
- The nature of the radiation; factors determining radiation arriving to the Earth
- The catalytic effect of the Sun on the formation of life and its effect on living beings
- Use of solar energy from the beginning to the present day
- Conversion of solar energy into heat
- Conversion of solar energy into electricity
- Solar cell types
- Advantages and disadvantages of solar energy use
- Use of solar energy in modern architecture
- Possibilities of using solar energy at home DIY: Beer collector; solar cooker construction

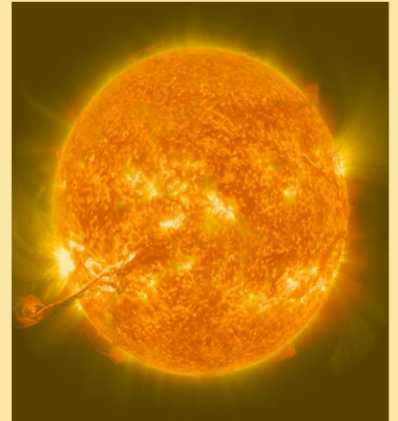


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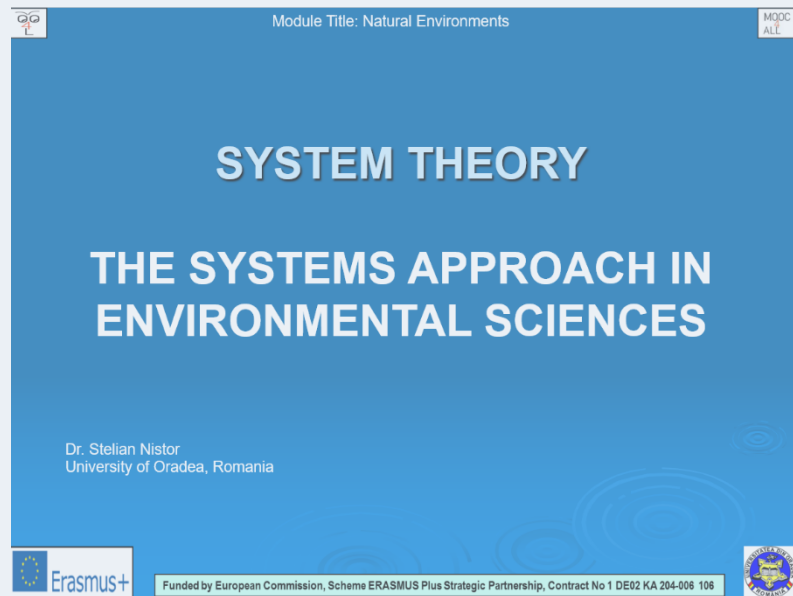
The Solar Energy

Attila Böröcz



Environment protection

1. General System Theory, Feedback Mechanism
2. The Litosphere T.O.M.
3. The Athmospheric System
4. The Hydrosphere
5. The Biosphere
6. Protected Areas. Introduction
7. The Natura2000 Network
8. Living Sustainably



2. HANDBOOK

A handbook has been prepared to describe the courses, summarising the field exercises, tools and exercises used. It also includes literature recommendations related to the course topics.

Field exercises,

TOOLKit,

exercises



3. Train The Trainer course content and online course - 18.02.2022



ERASMUS PLUS MOOC – 2019 – 1 DE02-KA204-006106

O3: Blended Learning Units Module for practical field and laboratory exercises
Start: 15.11.2020 End: 14.04.2022

Coordinator: PL
Responsible: all (DE, HU, RO)

Activities:
2. Collect field methods, try them out in the field
3. Describe, maybe make little films
4. Compile list of tools we need (shovel, drill, hammer....)
5. Translate into national languages and in English

Interim Deliverables:

15.12.2020 Interim report to NABIBB (third piece of money for partners)
15.5.2021 E1 in Kraków
15.3.2022 E2 in Köthen
14.4.2022 Final report



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Challenge

To design the MOOC-Course in such a way that despite the totally anonymous and self-organized training, the bridge is built from the theoretical input into a practical field work

Enabling the student

- to find own discoveries
- To Find inspiration in the practical work
- To develop critical thinking
- To develop the courage towards critical thinking and asking critical questions



Susanne Rahner



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Challenge

- To give knowledge input
- To create critical questions
- To create own discoveries on the subject in order to enable a transfer from the theoretically learned new knowledge into practical field exercises.
- To provide a toolkit for the field exercises
- Toolkit must be simple and cheap for purchasing items, ideally with items you will find at home
- To give tasks the students can fulfill
- To give **meaningful** tasks
- To provide useful access to other sources of knowledge, i.e. statistic links, links to specific information
- **To enable the students:**
 - ❖ To work **completely** alone on these tasks
 - ❖ To work **with other fellow students** (via online or presence mode)
 - ❖ To work **either with a real teacher or without a real teacher**



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Do's for a Blended Exercise

Can you think of more??

- + very clear instructions (better too many than too few)
- + refer clearly to the films, videos, power points, learning material to be worked through before the field exercise starts
- + give time estimates on the duration of the parts, so the students can make a plan
- + test the field exercise prior to launch, measure time, collect questions
- + Exercise must result something, students can take home (i.e. Poster, Table filled, a written documents, fotos....)
- + give a list of material needed
- + material must be simple, easy-to-reach, ideally in your household anyway, or cheap to purchase
- + make all this information nice, easy to read, colourful and encouraging
- + provide it in printable format (pdf, not too large a format, must be easily printed out by a home-printer)
- + feedback questionnaire added to capture the mood and their reflexions



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Don'ts for a Blended Exercise

- Too complicated explanations
- Lacking explanations
- Exercise wants to cover too many aspects
- Toolkit too large, complicated, expensive
- Exercise does not result in an inspiring finding
- Exercise has no result
- „Recipe“ layout is boring and not inspiring
- Field exercise has not been tested prior to launch
- Knowledge input prior to field exercise is unclear
- No time schedule given prior to the field experiment

Can you think of more??



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Exercise 1 - Plastic Exercise And Ecological Footprint

<https://www.omnicalculator.com/ecology/plastic-footprint>
+ pdf exercises in edx-Platform

- Target group
- Time needed
- Toolbox very nice, simple and consumer-friendly
- Learning objectives
- Reference Knowledge (which films to watch first, some other links and information)
- Recipe to prepare the field exercise
- Level simple and advanced
- Recipe how to use the plastic calculator in the internet
- GO! Keep and share the results



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Exercise 1 - Plastic Exercise And Ecological Footprint

<https://www.omnicalculator.com/ecology/plastic-footprint>



- Computer
- Paper & pen
- Camera or mobile phone
- Ticket or bicycle for a ride to a local waste disposal company



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Exercise 2 Bringing Back a Piece of Nature – Soil Unsealing on Your Site

pdf exercise in edx-Platform

- Goals
- Target group
- Time needed
- Subject Reference (keywords)
- Reference Knowledge (which films to watch first, some other links and information)
- Recipe to prepare the field exercise
- Level simple and advanced
- Conducting questions
- GO! Keep and share the results
- Toolbox very nice, simple and consumer-friendly



Susanne Rahner



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4. Digital Tools for Online Teaching and Learning

„MOOC4All – From idea to training material to open source platform“
First international conference held on June, 17th 2021

How to make MOOC more interesting?

MOOC4All >> Massive Open Online Course

Disadvantages of MOOC:

- High drop-out-rate (varying from survey to survey: 40-80 percent, 90 or 96 percent)
- Not finishing any particular series of online courses
- Leaving without certificate, after dropping out

Advantages/ Benefits:

- Rising number of participants
- Improving knowledge and skill
- Chance to flexibly embedding parts of the courses into an individual curriculum
- MOOC as part of the individual learning career
- Good additional way to broaden your knowledge horizon
- In times of crises as during the current Corona Pandemics: MOOC seminars have experienced an enormous increase (400-600 percent)

Conclusion:

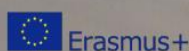
Completion rates are not a measure of success.
Learning is improved when students apply the theoretical concepts to practical scenarios.

Start to build a „Learning culture“ that supports and values eLearning:

Demonstrate that online learning is to be taken as serious as classroom training!

To achieve that the following points are to be taken into consideration:

- Tutorials are more motivating than normal PowerPoint slides
- Film in more informal setting
- Set expectations clear up front at the beginning
- Shorter videos are particularly engaging
- Videos that show the face of the speaker are more motivating
- Videos in which teachers tend to speak quickly and with enthusiasm are more motivating
- One should combine movement and a visual flow with a natural flow of speech



Digital Tools for Online Teaching and Learning

In cooperation with five partners from four countries (Germany, Hungary, Poland, Romania), we design a digital European educational concept and a MOOC = Massive Open Online Course on environmental topics.

This poster shows the tool kit we recommend for the development of MOOCs; the tool kit is a part of the MOOC Handbook (output 2).

- We've chosen the 63 tools according to the requirements of Erasmus+.
- Criteria are data protection, pricing, open-source or not, usability, embedding codes.
- ubb staff has tested many of the tools.
- Based on our experience we framed the categories, descriptions and recommendations.

Meeting and Training Tools (Selection) <5 tools>



We've tested BBB, GoToMeeting, Jitsi, Youtube, and Wonder,

but our favourite is ZOOM: runs stable on all OS, low-cost tool, and we've recorded our videos in MP4 quality with ZOOM.

Learning Management Systems (Selection) <5 LMS>

We've tested Moodle and Reteach.

In the MOOC4ALL project, we're going to work with the LMS / CMS of edX.



Assignment and Quiz Tools <7 tools>

All MOOC platforms provide quiz tools, but you can also embed quizzes made with external tools.

We've tested LearningApp, Wordwall and many other tools.

Auxiliary and review tools <8 tools>

Offers some smart tools for various purposes, e.g. shorten URL, provision of photos, checking your English texts, digital translators...

Our beloved tools are



DeepL

... because the free plans of Grammarly (checks your English texts) and DeepL translator deliver very good results.

MOOC platforms (selection) <6 platforms>

Besides the big international players, we'd like to present platforms with free access and offering courses on environmental matters from Germany, Hungary, Poland, and Romania.

We've tested e.g. Coursera and oncampus.

We will host our MOOC4ALL project on edX ... because it's free of charge and open-source.



Tools for the development of teaching materials <12 tools>

Videos, charts, posters, maps, etc.

This poster was created with Canva. The tool is easy to use and offers a wide range of template and graphic elements. Using templates shows their limits.



Tools for digital collaboration <20 tools>

This is the biggest subchapter in our tool chapter.

We divided the tools according to the following functions:

- joint video conferences (see box 1),
- joint access to files in cloud storage,
- joint development of content in cloud-supported documents,
- the organisation of joint work with project management tools and
- tools for the digital coordination of appointments.

In our MOOC project, we use Nextcloud, Trello, and different appointment tools.



17.06.2021 MOOC4ALL Multiplier Event 1: From idea to training material to open source platform

5. MULTIPLIER EVENTS

- ❖ 17.06.2021 Multiplier Event - Krakow - ZOOM meeting

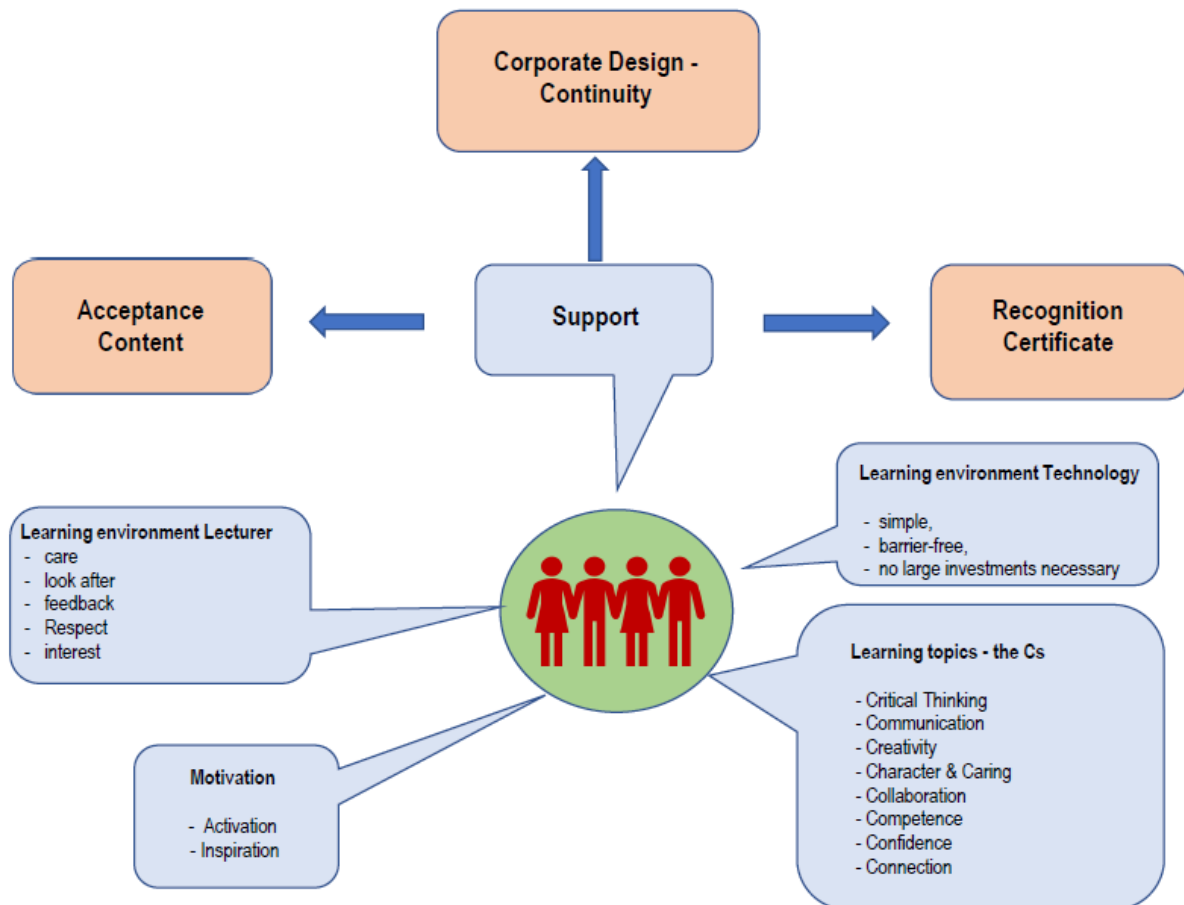
„MOOC4All – From idea to training material to open source platform“

- ❖ 21.03.2022 Multiplier Event - Köthen - ZOOM meeting

„MOOC4All - Sustainable Teaching for Everyone“



The cornerstones of a successful digital course



SUMMARISE AND FUTURE VIEW

Summarise our experiences about MOOC course developing how to use this results what is the future plan.

Some questions of MOOC course of the develop:

1. Teaching in front of a camera is not the same as teaching in a classroom. Although the teaching content can be similar, there are important differences between an online course and a face-to-face course. For example, you and the participants take part in the course at different times (asynchronous) and you cannot react to signs of confusion or boredom as you would in a classroom. - It is very important to do screen tests as soon as possible to get used to speaking and acting in front of the camera. It would be even better if you first watch some online courses and videos on the internet yourself and note down your experiences regarding course length, boredom, course presentation, camera, lecturer, accompanying material.
2. From concept to finished product, a video lecture requires script drafting, filming, multiple takes, editing, cutting, uploading, subtitling/transcribing, preparation and integration into the MOOC platform. Based on feedback from teachers who have already created MOOCs, one needs to plan for about 2-3 hours per 10 minutes of finished film content.
3. A quality assurance check for a MOOC should cover several aspects:

- Content (are all numbers and calculations correct?)
- Appearance (has attention been paid to grammar and minor details such as layout, colours, consistency of layout?)
- Coding (are all assessment questions correctly numbered and coded?)
- International accessibility (does the course carefully define technical terms and avoid idiomatic expressions?)
- Language of the supporting material (only in English or also other national languages?)
- Licences? Open licences?
- Only provide links for the accompanying material?

Technical support

In order to implement a MOOC system a scalable web server is required. Either a self-hosted Linux PC with a fast internet access is utilized or a provider is used. Beside the PC an uninterruptible power supply (UPS) is recommended to buffer power failures. Depending on the scope of the MOOC courses an expandable NAS system is recommended.

This project used the widely used OpenSource MOOC software Open edX (<https://openedx.org>). It is scalable from small class room to course with thousands of students. Beyond the scope of the current project it offers the possibilities of interactive forums, discussion boards or live video conferencing.

Future developments towards cross-platform and/or cross-devices are possible. A strength is the easy to use authoring system which guides through the implementation of MOOC courses.

The Open edX platform comes with integrated dashboards to monitor and maintain the system. Data analysis can be done close to real time. In the background the system can collect usage data to track the performance of the students, teachers and course team.

The development results of the project can be successfully used in digital and blended education ways.

Thank you for the cooperation!