



Modernizing collaborative digital education in emerging regions with active learning methodologies

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Thoughts about collaboration: In Research

- As researchers we collaborate internationally with our peers
 - Of course: High competition on our home turf!
- Collaboration is recognized as giving **higher quality**
- **Peer review** is essential for publication
- Collaboration increases changes for citations and personal ranking
 - Promotion depends upon it



Thoughts about collaboration: In Education

- Do educators collaborate internationally with peers?
 - No competition at all on our home turf!
- Is collaboration recognized as giving **higher quality**?
- How do we perform **peer review**?
- Collaboration should increase changes for citations and personal ranking
 - Does promotion depend upon it?



Collaboration in Emerging Regions

- Lack of collaborative work to create or share learning material
 - Limited resources (physical and digital)
 - Digital divide (limited access to information and technology)
 - Lack of training and awareness
 - Cultural factors
- Educational material is closely guarded by educators as a **personal or proprietary asset!!**

Ask yourself...

- In the last 3 years...
 - Have you had a journal/conference article reviewed?
 - Have you yourself reviewed articles?
 - Has your educational material been peer reviewed ?
 - Have you yourself reviewed educational material from someone?

Digital Transformation in Education

- **Before Covid19:** Remote education was a “no-no”
 - Teaching: I must see my students in the eyes
 - Labs: Will never give equal value
- **After Covid19**
 - Teaching: Everyone doing it (Zoom, Teams)
 - Labs: Can help a lot
- But do we do “remote” correctly?
 - Focus too much on teaching vs learning?

Reading in a Library...



More than 900 years ago (Bologna 1080)



Nowadays...

And going to class



Do we still need this?



Focus on learning, not teaching



- **Self-paced (at your own speed)**
- **Any where**
- **Any time**
- **Just in time**
- **Collect knowledge (and points as assessments)**
- **How to get creativity into “not physical meetings”?**
- **How to create remote collaboration?**

New way of collaboration in education

- **Educators** **share** basic educational material
- **Educators** **re-use** basic educational material
 - **Prevent the Not-Invented-Here (NIH) syndrome**
- **Educators** **collaborate** to improve educational material and to create **common courses**
- **Educators** **collaborate** towards (common or not) not-for-profit **programs** (academic, professional)
- **Educators** **review** learning material from others for **quality**
- **Students** **prepare themselves** before class
- **Students** **establish themselves** their “missions” and personal learning journeys

A Paradigm shift

- Applying **Active Learning** Methodologies
 - Flipped-classroom
 - Challenge-based Learning
 - Remote Laboratories
- **Educator-to-educator collaboration** to develop, co-create, share, re-use, translate, digital learning material
- Educators in emerging regions **require support** for this shift!



The EXPLORE Energy Digital Academy (EEDA)

- Educator to educator collaboration in emerging regions
- Erasmus+ "Capacity Building in Higher Education" Projects
 - **EUSL-Energy** (Sri Lanka, France, Netherlands, Sweden)
 - **EUBBC-Digital** (Bolivia, Brazil, Cuba, Belgium, Netherlands, Romania, Spain, Sweden)
 - **EU-BEGP** (Bolivia, Ecuador, Guatemala, Peru, France, Spain)
 - **EDU-ABCM** (Cameroon, Ethiopia, Mauritius, Mozambique, Italy, Sweden)
 - **EU-ZW** (Zimbabwe, Spain, Sweden)
- 42 partner universities in 21 countries in 4 continents



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



EXPLORE Energy Digital Academy

Overview of EEDA

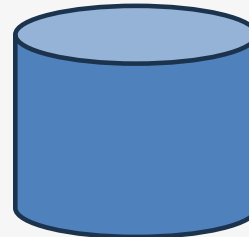
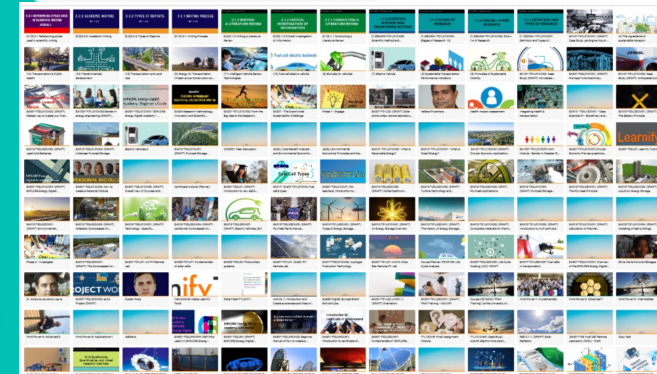
Network of Educators



Digital tools



Co-created learning material



Repository

Digital Educational Resources Quality Assurance Toolkit

Self assessment for quality

Please note that you can only use educational resources created by you or in which you are a co-author

Digital Learning Resource URL

SA002-T20L02CM07: Aeroelasticity

Module Title: Aeroelasticity Module Abstract: This Content Module includes 2 video lectures addressing aeroelastic design of compressor and turbine b...

7 Keywords identified:

SA002-T20L02CM07: Aeroelasticity

Module

Last updated 24 days ago (02/03/2022)

Learnify

You cannot start the self-assessment for quality because the learning resource is missing essential information! There are 4 problems identified. Please check the [details](#) link.

Metadata

Intended Learning Outcomes: ATTENTION

Assessment: GOOD

Abstract, Uniqueness and Social Relevance: GOOD



<p>New Remote Lab</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>	<p>Spectrometry Remote Lab</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>	<p>Solar Remote Lab</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>	<p>Wind Energy Laboratory</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>	<p>Combustion Remote Laboratory</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>
<p>Wind Energy Remote Online Lab</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>	<p>Columb Lab</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>	<p>Wind Energy</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>	<p>Steam Turbine</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>	<p>Solar Energy</p> <p>Remote Energy</p> <p>Remote Energy Lab (R-EL)</p> <p>NOT AVAILABLE</p>

Investigate in the Grand Hotel Challenge

The first milestone in the G4SC is to formulate the guiding questions. Each team should define 3 questions and submit a short report to summarize how it AMO1.

The second milestone consists of identifying the necessary activities needed to answer the questions - In other words, to formulate a plan for the work at a seminar with all the challenge teams and the supervisors is organized to present the proposed plan.

The Assessment Module (preliminary) can be run from the following [Lecture 2](#) if you are required. In alternative, the reports must be handed in this institute. The time reported on the modules is the time required to read the instructions, it doesn't include the time needed to work on the assignment.

<p>SA201-T02L01AM01</p> <p>Milestone 1 Guiding questions development</p> <p>A report must be submitted through a Learning Management System</p>	<p>SA201-T02L01AM02</p> <p>Milestone 2 Identify relevant activities</p> <p>A report must be submitted through a Learning Management System</p>	<p>SA201-T02L01CM01</p> <p>Proposal presentation</p> <p>The seminar is organized online</p> <p>A report must be submitted through a Learning Management System</p>	<p>SA201-T02L01AM03</p> <p>Milestone 3 Identify relevant resources</p> <p>A report must be submitted through a Learning Management System</p>
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Act in the Grand Hotel Challenge

A final challenge workshop is organized to present your progress and receive feedback and inspiration from your peers. At this stage, you should have developed specific solutions. Remember that you will have to demonstrate the feasibility of your proposed solution by comparing different technologies, assessing or those aspects can be discussed in the workshop to exchange ideas among the teams.

A challenge log template can be found in module AM06. Here, your team will summarize reflections and lessons learned and experiences gained through

<p>SA201-T02L01AM04</p> <p>Milestone 4 Sustainability Framework</p> <p>The workshop is organized online</p> <p>A report must be submitted through a Learning Management System</p>	<p>SA201-T02L01CM04</p> <p>Crisis-collaboration workshop</p> <p>The workshop is organized online</p> <p>A report must be submitted through a Learning Management System</p>	<p>SA201-T02L01AM05</p> <p>Milestone 5 Hotel Sustainability Audit</p> <p>A report must be submitted through a Learning Management System</p>	<p>SA201-T02L01AM06</p> <p>Milestone 6 Hotel Sustainability Strategy</p> <p>A report must be submitted through a Learning Management System</p>
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Tool for Quality Assessment

Remote Laboratories

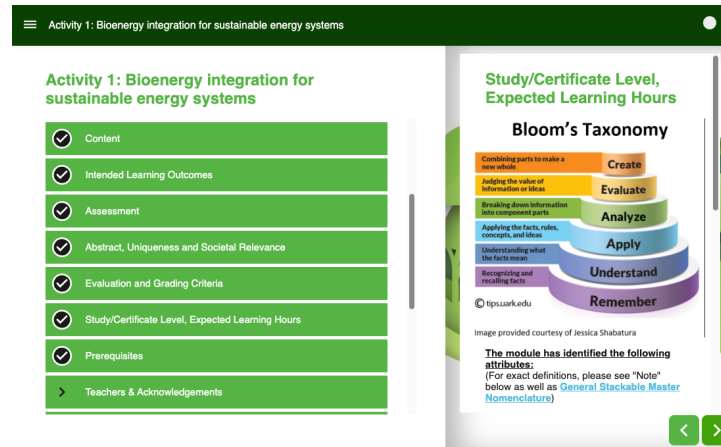
Challenge-based Learning

Basic unit of learning material: a Module

Module

0.5 to 5 (ELH)

Estimated Learning Hours



Activity 1: Bioenergy integration for sustainable energy systems

- Content
- Intended Learning Outcomes
- Assessment
- Abstract, Uniqueness and Societal Relevance
- Evaluation and Grading Criteria
- Study/Certificate Level, Expected Learning Hours
- Prerequisites
- Teachers & Acknowledgements

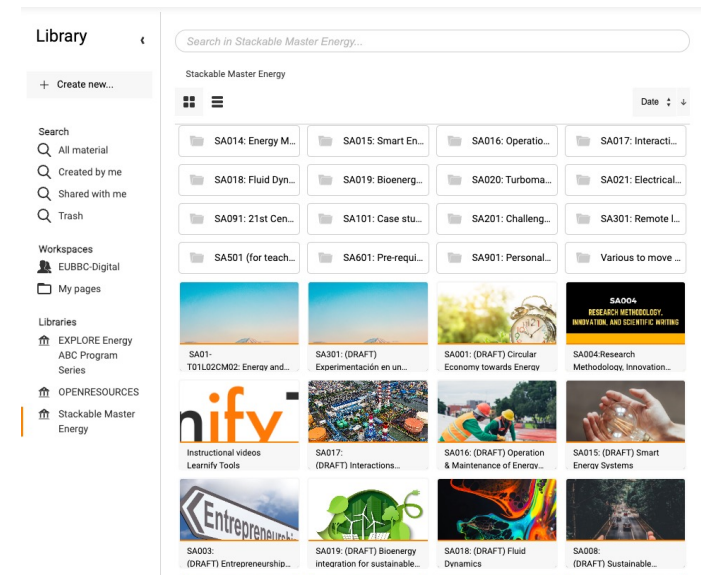
Study/Certificate Level, Expected Learning Hours

Bloom's Taxonomy

- Create
- Evaluate
- Analyze
- Apply
- Understand
- Remember

The module has identified the following attributes:
(For exact definitions, please see "Note" below as well as [General Stackable Master Nomenclature](#))

Authoring Tool to co-create Modules between educators



Library

Search in Stackable Master Energy...

Stackable Master Energy

SA014: Energy M... SA015: Smart En... SA016: Operatio... SA017: Interacti...

SA018: Fluid Dyn... SA019: Bioenerg... SA020: Turboma... SA021: Electrical...

SA091: 21st Cen... SA101: Case stu... SA201: Challeng... SA301: Remote L...

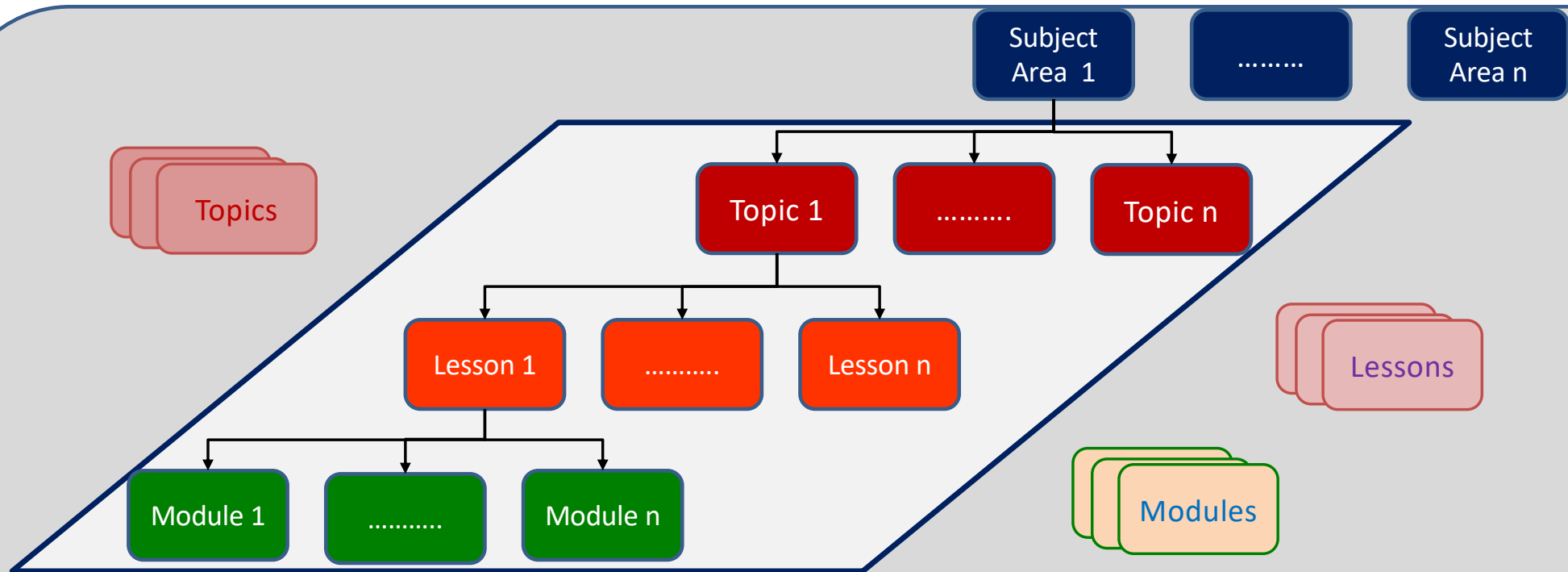
SA501 (for teach... SA601: Pre-requi... SA901: Personal... Various to move...

SA003: (DRAFT) Entrepreneursh... SA019: (DRAFT) Bioenergy integration for sustainable... SA018: (DRAFT) Fluid Dynamics SA008: (DRAFT) Sustainable...

Modules stored in the Repository organized in "folders"

Learnify platform

Structure of the Learning Content

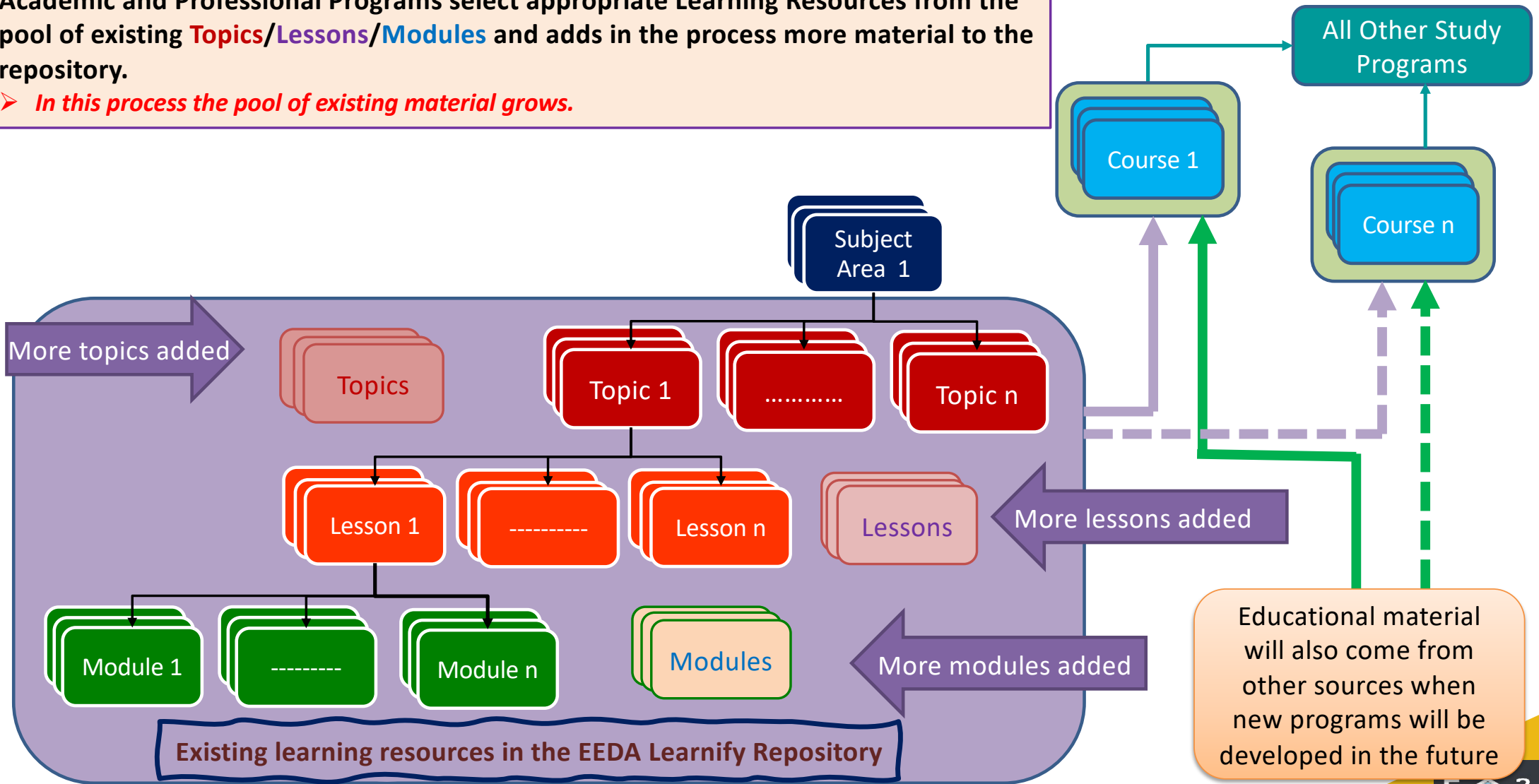


Every content in the repository is called a “Learning Resource”:





























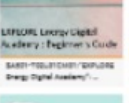






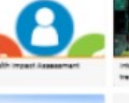


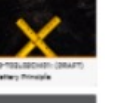













- Independent upon if it is a “Subject area”, a “Topic”, a “Lesson” or a “Module”

Academic and Professional Programs select appropriate Learning Resources from the pool of existing **Topics/Lessons/Modules** and adds in the process more material to the repository.

➤ *In this process the pool of existing material grows.*



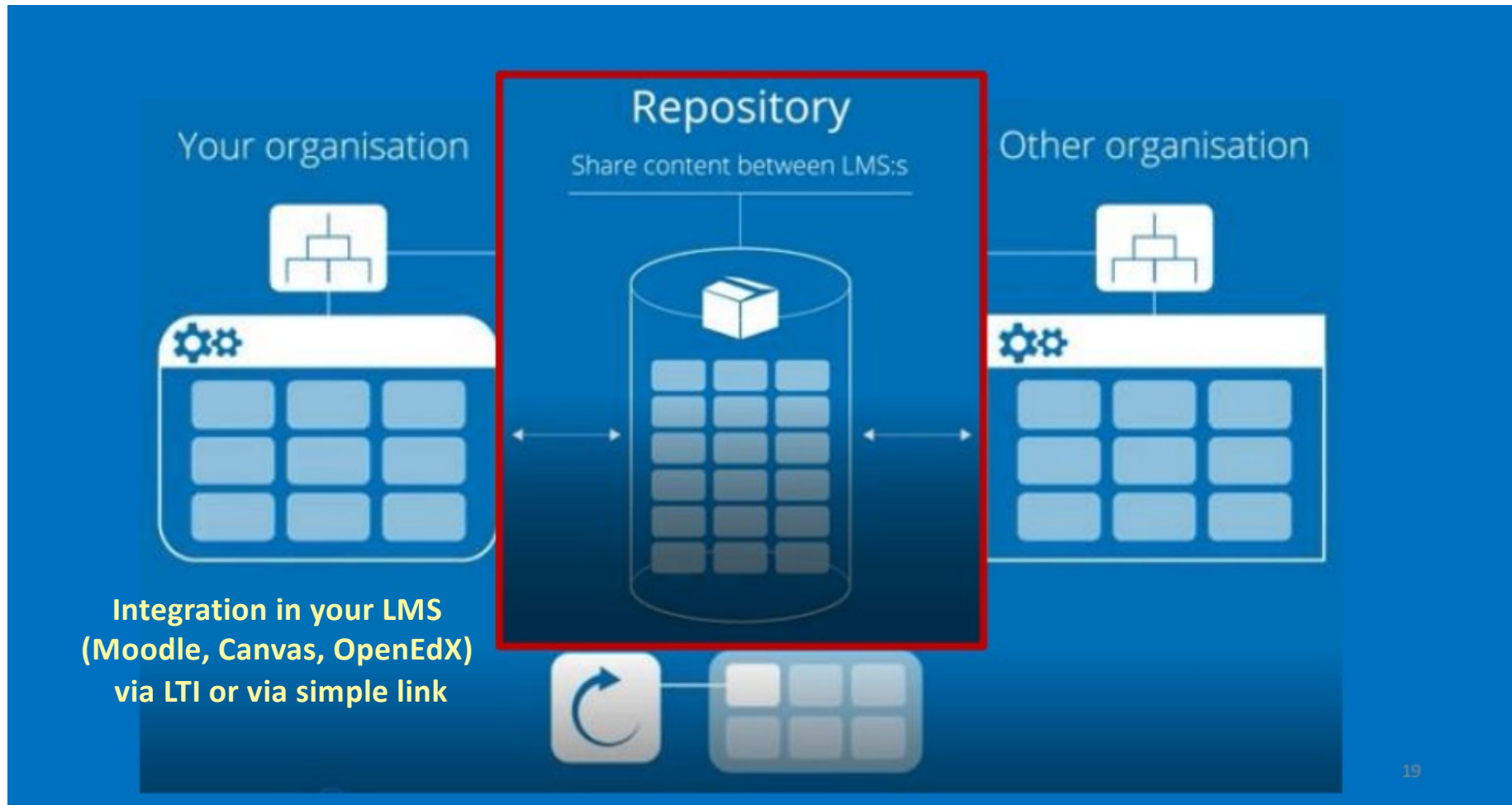
Example of available Modules

Collaboration between educators




How to use/re-use learning material?



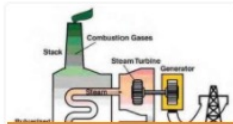
How can educators collaborate?

Stackable Master Energy > Energy Conversion Technologies > SA002-T20: Turbomachinery

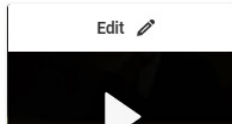
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SA002-T20L02CM05: Aerodynam...



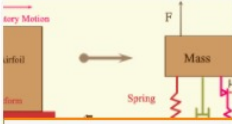
SA002-T20L02CM01: Fundament...




SA002-T20L02CM03: Turbojet Design, Turbofan...



SA002-T20L02CM04: Aeroerivat...



SA002-T20L02CM06: Vibration...



SA002-T20L02CM07: Aeroelasticity

thermodynamics, mechanical work and efficiency of Brayton cycle machines.

Stored in MYPAGES

Type
Author module

Last updated
Feb 16 2022

More info >

Share

Update SCORM-package

Move resource

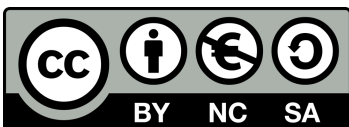
Create copy

Unpublish

Manage social data

Move resource to Trash

Creative commons licenses for reuse in open "not for profit" collaboration



Share

Copy link
Copy link to Player or Editor

Share with co-author
Give Editing Rights to other Authors

Share with viewer
Give viewing rights to other users

Export
Download and publish module to any LMS

Publish
Publish to a library

Select the part you want to copy and reuse in your module.

- L2CM02: Brayton Cycles
- Module
 - L2CM02: Brayton Cycles
 - Activity 2a: Video 1
 - Activity 2b: Video 2
 - Activity 2c: Slides and other reading
 - Activity 2d: Basic control questions (compulsory ACMCQ)
 - Activity 2: Learning activities (including basic assessment)
 - Activity 3a: Open-ended discussion questions
 - Activity 3b: Submit & discuss your own questions
 - Activity 3: Open-ended discussions
 - Activity 4a: Conclusion and Main Take

So, is EEDA about MOOC?

- Massive Open Online Courses (MOOC) (e.g., Coursera, UdaCity, FutureLearn,...) are not designed for co-creation
- EEDA goes much further...
- In EEDA, educators can “build” their own courses using Modules “lego-wise”
- Students access to Modules in a **flipped-classroom** perspective
- EEDA enables active learning with classroom time (typically remote) applying concepts, problem-solving and group work.

Applying flipped-classroom: Planner

- A possibility to put different Modules together into a “course”
- Only one link is given to the students for the whole “course”
- We include synchronous sessions (workshops, discussions) with the educator after one or more self-study Module

At the end of the lesson the learner will have achieved the following goals:

- LILO1: Explain what the circular economy is, in theory and in practice
- LILO2: Explain the differences between the circular economy and linear economy
- LILO3: Explain how circular economy principles integrate with sustainability principles
- LILO4: Explain the Sustainability Development Goals and Paris Agreement
- LILO5: Know the basic definitions for CE indicators
- LILO6: Know the basics of measurements adopted in CE



180 min

CM01: What is the Circular Economy? (Ruchira Abeyweera, OUSL, Sri Lanka)

Developed by Ruchira Abeyweera, OUSL, Sri Lanka



60 min

CM01Q1: Peer discussion (Ruchira Abeyweera, OUSL, Sri Lanka: EMPTY so far)

In this module the learners have the possibility to discuss their perspective upon the question: What is the importance of Circular Economy? The guide will monitor, but not participate or intervene in, this discussion. To be developed by Ruchira Abeyweera (OUSL). Voluntary The module is voluntary.



180 min

CM02: Historical Developments - Sustainable Development and Circular Economy (Mayuri Wijayasundara (Deakin University and Anvarta, Australia))

Developed by Mayuri Wijayasundara



60 min

CM02Q1: Peer discussion (Mayuri Wijayasundara (Deakin University and Anvarta, Australia): EMPTY so far)

To be Developed by Mayuri Wijayasundara. The guide will monitor, but not participate or intervene in, this discussion. The module is voluntary.



180 min

CM03: Sustainable Development and CE (SDGs 9, 12) (Maryana Henrysson (KTH, Sweden): EMPTY so far)

Developed by Maryana Henrysson (KTH)



60 min

CM03Q1: Peer discussion (Maryana Henrysson (KTH, Sweden): EMPTY so far)

In this module the learners have the possibility to discuss their perspective upon the question: xxxxx? The guide will monitor, but not participate or intervene in, this discussion. The module is voluntary.



300 min

CM04: (EUSL) Environmental Economics Principles and the Concept of Pollution Externalities (Pascal Da Costa and Emilien Ravigné, CS, France)

This module will show you that we all, as economic actors: as consumers or as firms, we generate pollution, and these pollution are



60 min

CM04Q1: Peer discussion (Pascal Da Costa and Emilien Ravigné, CS, France)

To be Developed by Pascal Da Costa and Emilien Ravigné (CS) The guide will monitor, but not participate or intervene in, this discussion. Voluntary

Example of "flipped classroom"

Activity 2: Learning activities (including basic assessment) 1

To fully assimilate the learning intended in this module the learner is recommended to listen to the recordings, read the accompanying lecture slides, answer, and reflect upon, the Assessment Questions presented.

- Activity 2a: Video 1
- Activity 2b: Video 2
- Activity 2c: Slides and other reading
- Activity 2d: Basic control questions (compulsory ACMCQ)

Activity 2d: Basic control questions (compulsory ACMCQ) 2

□ □ □ □ □

Question 1 of 5:

For a Brayton cycle machine the change in entropy in a component is a function of:

- Temperature ratio, pressure ratio, and gas constants
- The lower calorific value
- The change in enthalpy
- Only the gas constants

Activity 3: Open-ended discussions 3b

This activity gives a possibility to reflect upon a set of, for the content module relevant, Open-Ended Questions and discuss these with peers. It is also a preparation for the (for students registered for academic credits: compulsory) live discussion:

The activity consists of:

- reflect upon, and respond to, the presented Open-Ended Questions (OEQ)

- Activity 3a: Open-ended discussion questions
- Activity 3b: Submit & discuss your own questions

Bob Kielb 4

Professor of the Practice in the Department of Mechanical Engineering & Materials Science

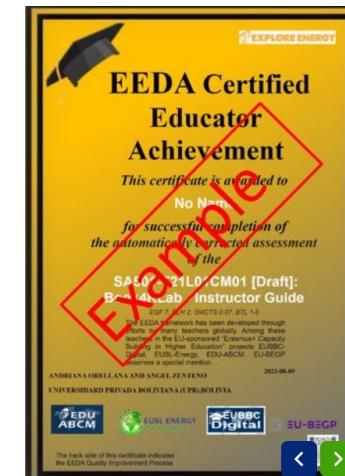
Bob Kielb has over 45 years academic, industrial and government research laboratory experience in turbomachinery propulsion. This consists of 8 years with the U. S. Air Force, 10 years with NASA Lewis Research Center, and 12 years with GE Aircraft Engines as Manager of Aeromechanics Technology. He has also been an Affiliated



3a

This sequence is locked

You have to complete the previous sections.



Challenge-Based Learning (CBL)

- Active Learning methodology, involving “21st century skills”
- Engaging students in real-world problems and challenges that require them to research, develop, and implement solutions
- Students work in groups, milestone meetings
- The outcome is not pre-determined
- EEDA Repository contains Modules for students and for educators!!

Challenge-Based Learning (CBL)

Stackable Master Energy > SA201: Challenges



Abc



SA201-T02L01CM02 The Grand Hotel Challenge roadmap



SA201-T01L01CM06 Challenge roadmap



SA201-T01L01 Engage in Challenge Driven Learning



SA201-T01L01CM01 Why Challenge Driven Learning?



SA201-T01L04: (Draft) Business Case



T01L01CM05: (DRAFT) Project management



SA201-T01L04CM04: (Draft) From Canvas to action to...



SA201-T01L04CM05: (Draft) MVP, Testing, Failing, Changing



SA201-T01L04CM03: (Draft) Issues related to customers...



SA201-T01L04CM02: (Draft) Getting an overview with ...



SA201-T01L04CM01: (Draft) The Energy-Business



SA201-T02L01CM01 The Grand Hotel Challenge description



SA201-T01L03: Technology Evaluation



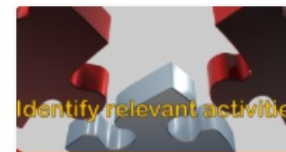
SA201-T02L01 The Grand Hotel Challenge



SA201: (DRAFT) Grand Challenges in the field of Energy...



SA201-T01: (DRAFT) EXPLORE Energy Grand Challenges



SA201-T02L01AM02 Milestone 2 Identify relevant activities



SA201-T02L01AM01 Milestone 1 Guiding questions development



Identify relevant resources



Hotel sustainability audit



Sustainability analysis framework

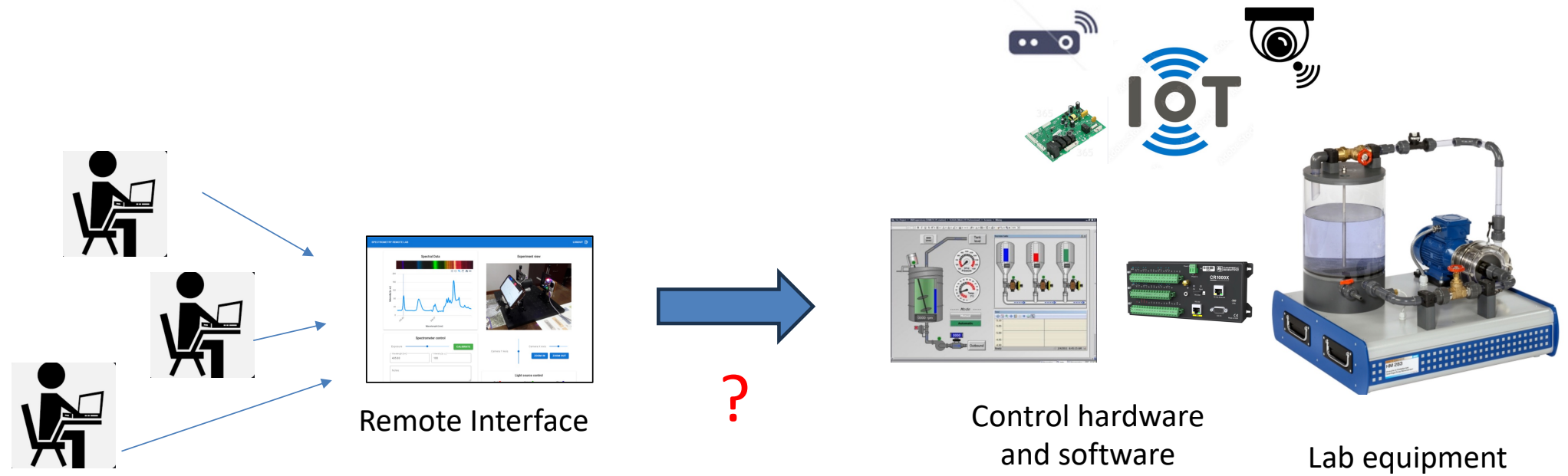


First Challenge
In Sri Lanka
4 Universities
150 students
“Sustainable
Hotel Challenge”

EEDA Remote Laboratories

- Optimizing lab resources globally
- Share labs through remote access
- Key element to link theory and practice
- Technically not trivial to “turn” a lab for remote control

What are Remote Laboratories ?



Remote students

Remote Interface

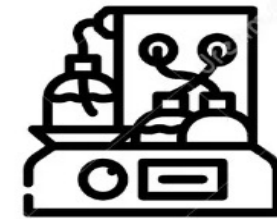
Control hardware and software

Lab equipment



Types of Remote Labs

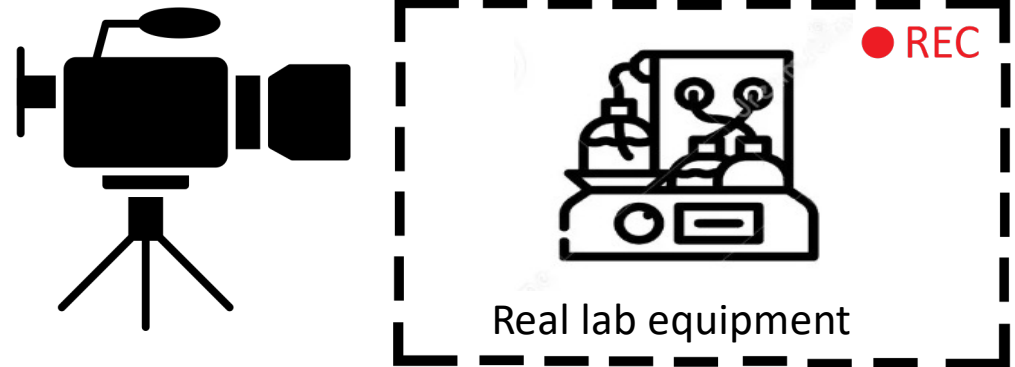
- **Ultra-Concurrent Labs**



Real lab equipment

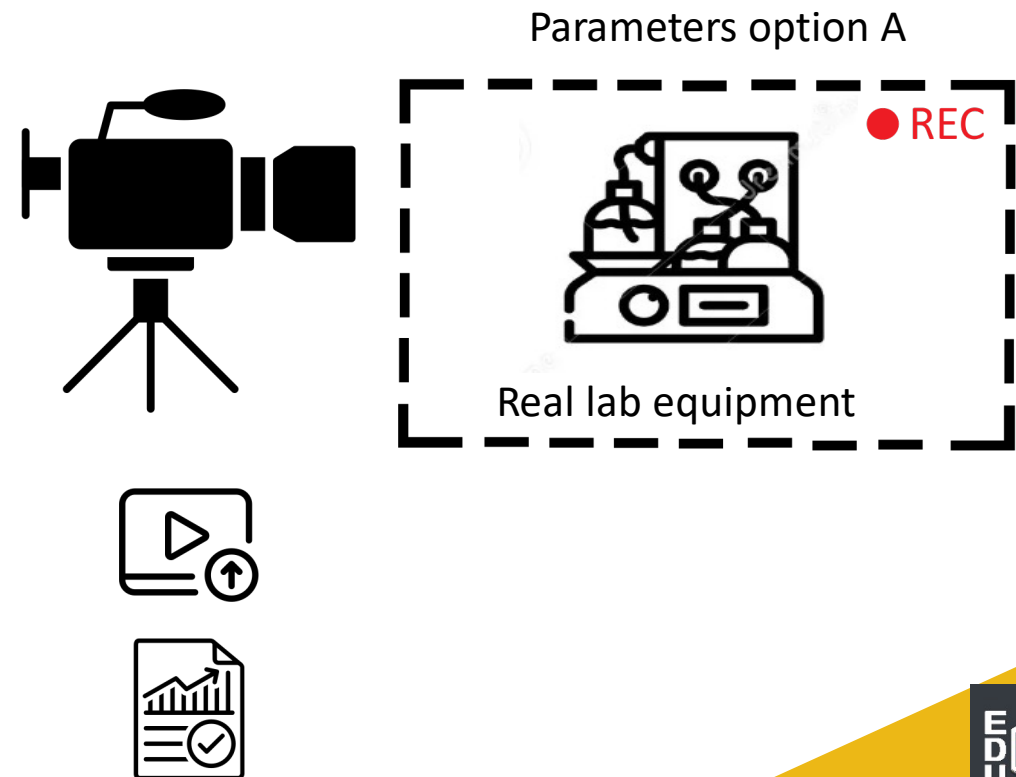
Types of Remote Labs

- **Ultra-Concurrent Labs**



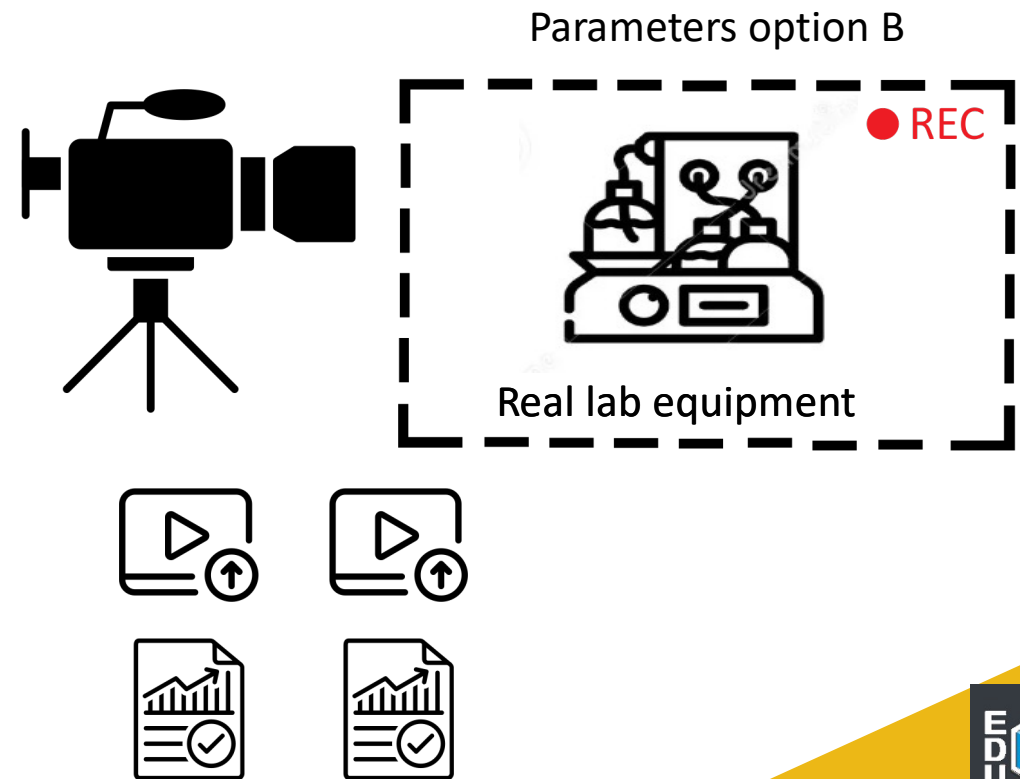
Types of Remote Labs

- **Ultra-Concurrent Labs**



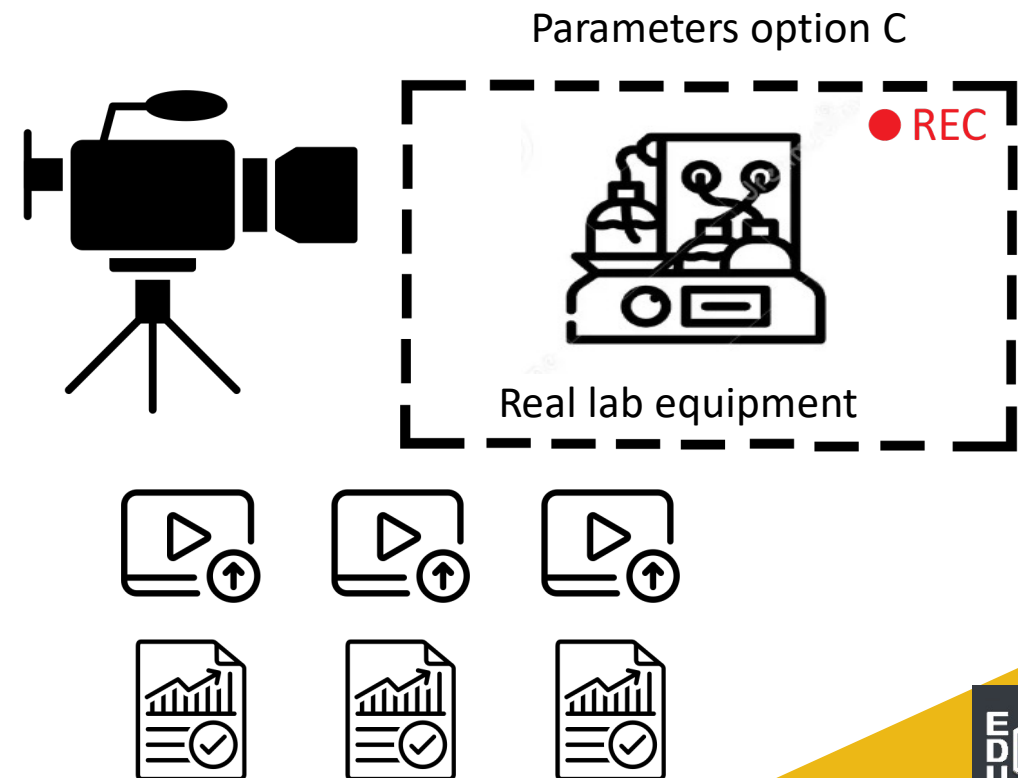
Types of Remote Labs

- **Ultra-Concurrent Labs**



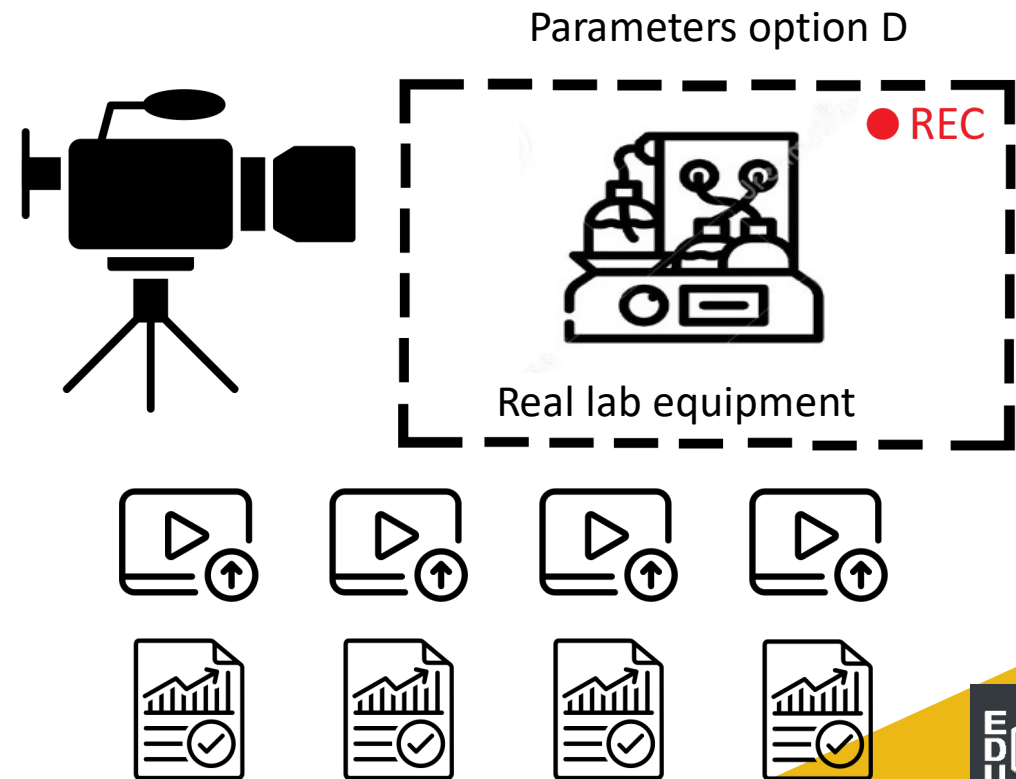
Types of Remote Labs

- **Ultra-Concurrent Labs**



Types of Remote Labs

- **Ultra-Concurrent Labs**



Types of Remote Labs

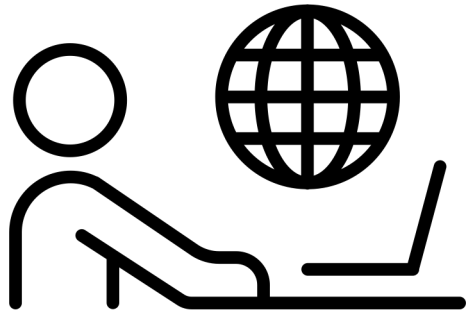
- **Ultra-Concurrent Labs**

Database

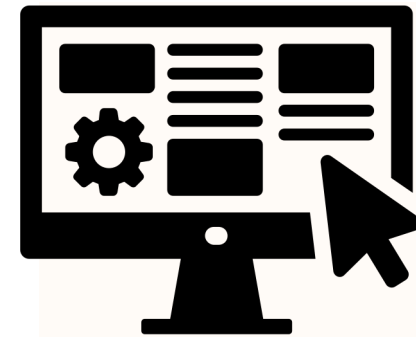


Types of Remote Labs

- **Ultra-Concurrent Labs**

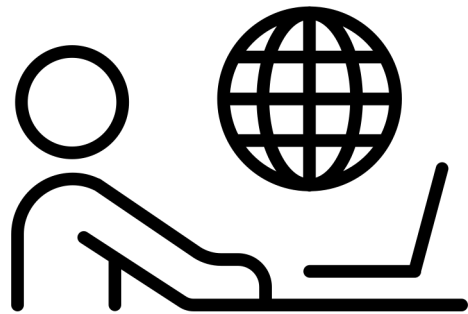


Web interface

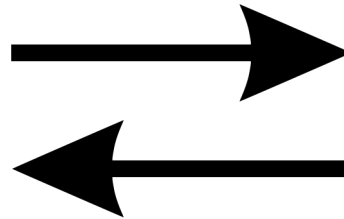


Types of Remote Labs

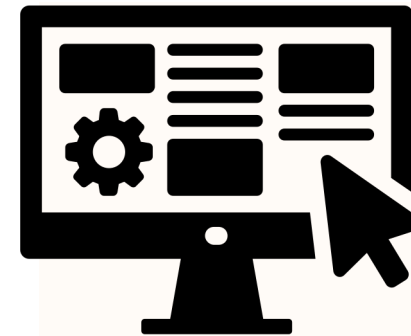
- **Ultra-Concurrent Labs**



Parameters selection



Web interface



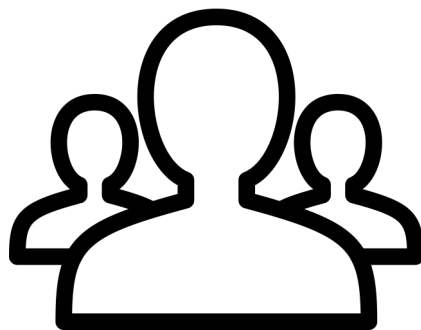
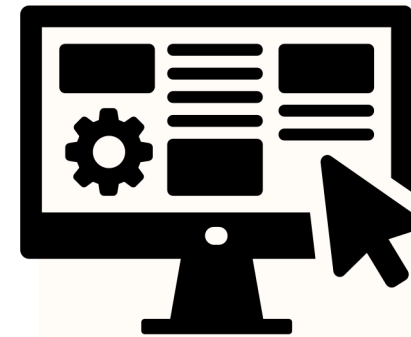
Videos and results from
real experiments (stored in
Database)

Types of Remote Labs

- **Ultra-Concurrent Labs**



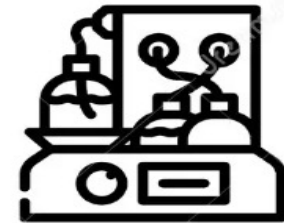
Web interface



Multiple concurrent users

Types of Remote Labs

- **Real-time Labs**



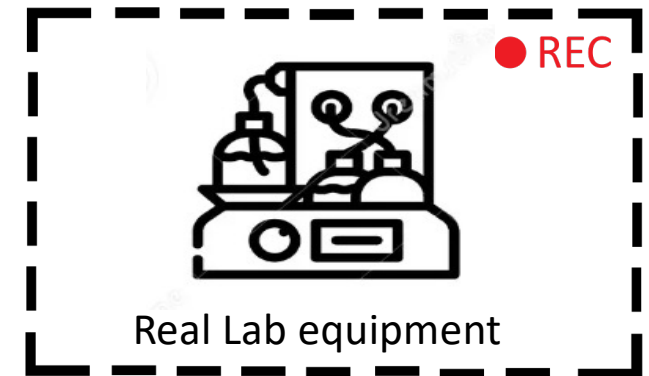
Real Lab equipment

Types of Remote Labs

- **Real-time Labs**

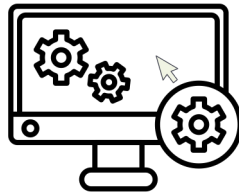


Live streaming



Types of Remote Labs

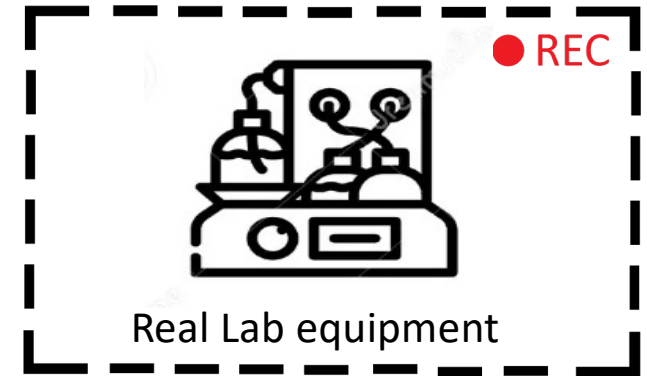
- **Real-time Labs**



Remote control



Live streaming



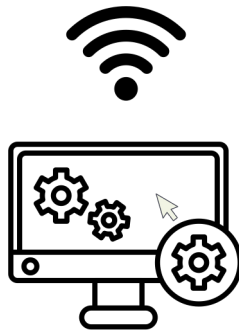
Real Lab equipment

Types of Remote Labs

- **Real-time Labs**



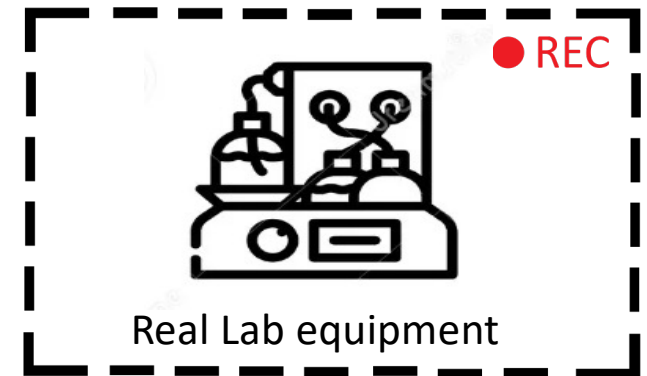
Only one student!!



Remote control



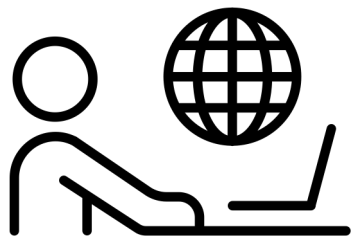
Live streaming



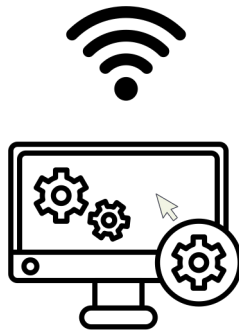
Real Lab equipment

Types of Remote Labs

- **Real-time Labs**



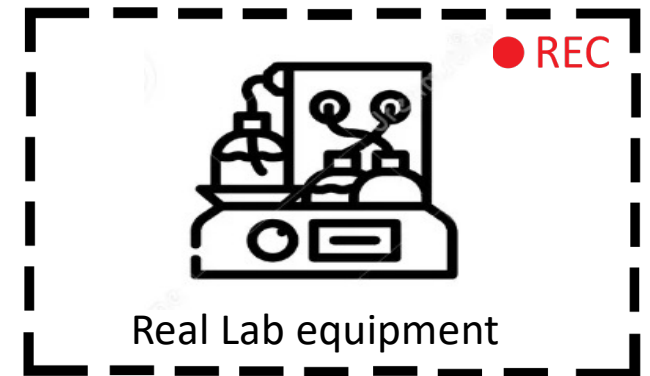
Only one student!!



Remote control



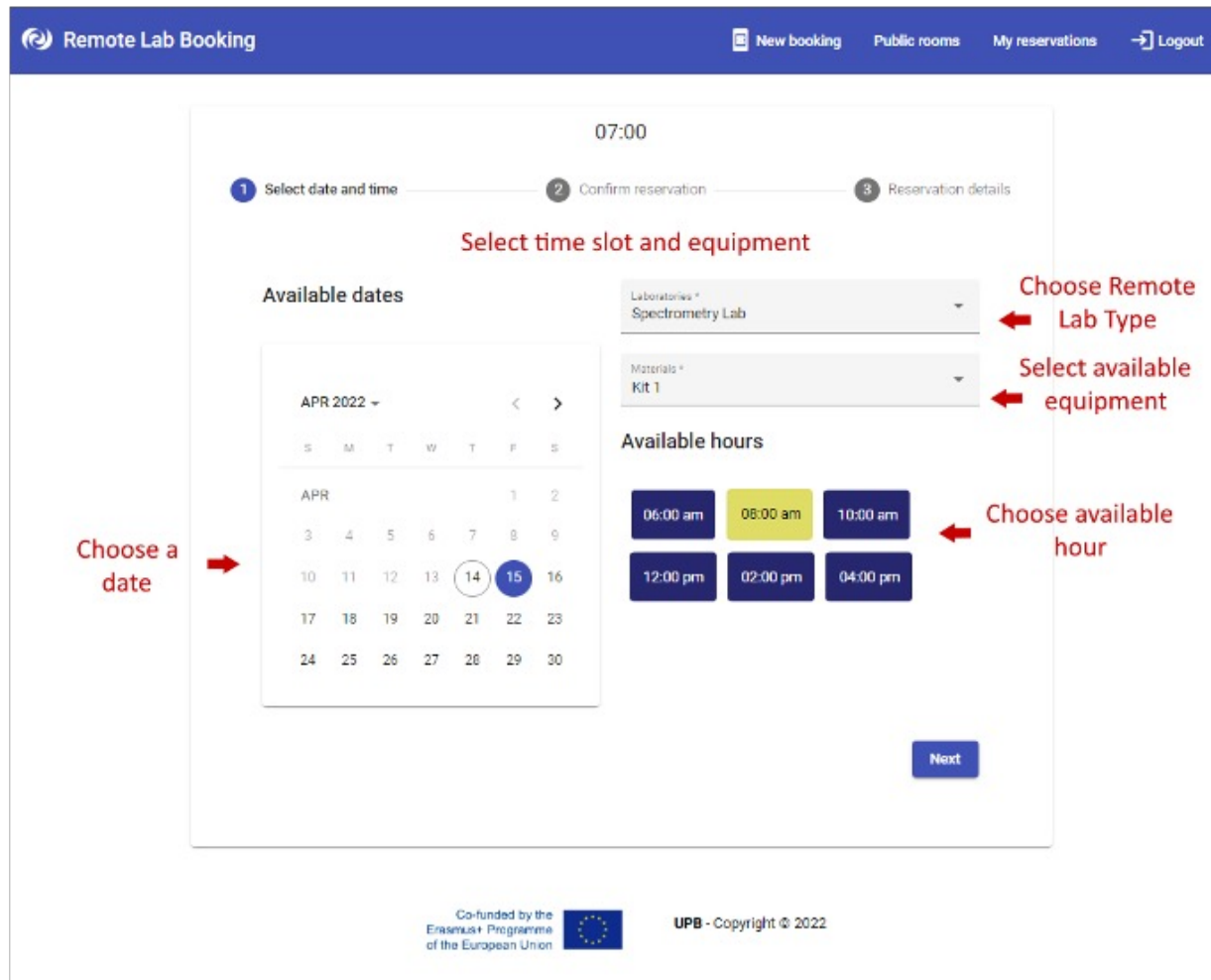
Live streaming



Real Lab equipment

Requires a Booking System for exclusive session (avoids interferences)

Generic Remote Lab Booking System



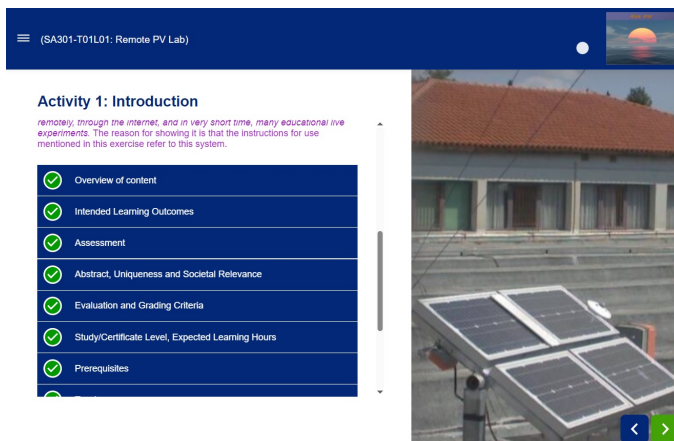
The screenshot shows the 'Remote Lab Booking' interface. At the top, there is a navigation bar with 'New booking', 'Public rooms', 'My reservations', and 'Logout'. The main content area is titled '07:00' and has a progress bar with three steps: '1 Select date and time', '2 Confirm reservation', and '3 Reservation details'. The current step is '1 Select date and time', which is further titled 'Select time slot and equipment'. The interface includes a calendar for 'APR 2022' with the 15th selected. To the right of the calendar are two dropdown menus: 'Laboratories' (set to 'Spectrometry Lab') and 'Materials' (set to 'Kit 1'). Below these are 'Available hours' buttons: '06:00 am', '08:00 am', '10:00 am', '12:00 pm', '02:00 pm', and '04:00 pm'. A 'Next' button is at the bottom right. Red annotations with arrows point to the calendar ('Choose a date'), the 'Laboratories' dropdown ('Choose Remote Lab Type'), the 'Materials' dropdown ('Select available equipment'), and the '08:00 am' button ('Choose available hour').

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

UPB - Copyright © 2022

Remote Laboratories in EEDA

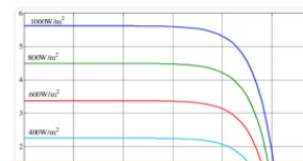
- A set of 20+ Remote Labs in energy are under preparation (7 up and running presently)
- Will allow users from anywhere to perform lab experiments
- Modules available for students and educators



(SA301-T01L01: Remote PV Lab)

Activity 1: Introduction
remotely, through the internet, and in very short time, many educational live experiments. The reason for showing it is that the instructions for use mentioned in this exercise refer to this system.

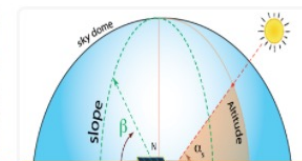
- ✓ Overview of content
- ✓ Intended Learning Outcomes
- ✓ Assessment
- ✓ Abstract, Uniqueness and Societal Relevance
- ✓ Evaluation and Grading Criteria
- ✓ Study/Certificate Level, Expected Learning Hours
- ✓ Prerequisites



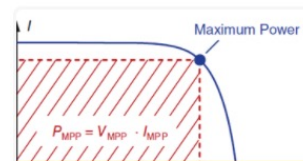
SA301-T1L01CM06:
Translation of the I-V curve



SA301-T1L01CM01: Instructions ...



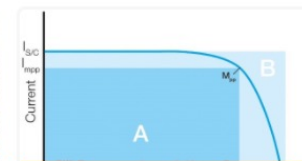
SA301-T1L01CM05: Determinatio...



SA301-



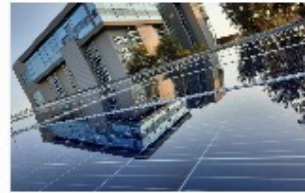

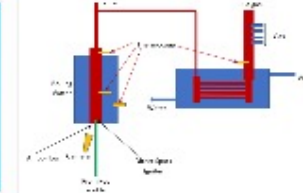

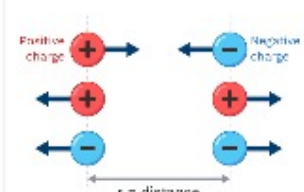





SA301-



SA301-

EEDA Remote Labs Portal

<p>New Remote Lab UPB</p>  <p>Course: Energy Instructor: Alex Villazon Description: Energy Remote Lab at KTH</p> <p>NOT AVAILABLE MORE INFO >></p>	<p>Spectrometry Remote Lab Universidad Privada Boliviana</p>  <p>Course: Optics Instructor: Omar Ormachea Description: Low-cost Spectrometry Remote Lab</p> <p>NOT AVAILABLE MORE INFO >></p>	<p>Solar Remote Lab Universidad Privada Boliviana</p>  <p>Course: Renewable Energy Instructor: PhD. Alex Villazón Description: Remote Solar Lab for testing with a solar panel</p> <p>AVAILABLE MORE INFO >></p>	<p>Wave Energy Laboratory University of Peradeniya</p>  <p>Course: Ocean Energy Instructor: Dr. Kamalanath Samarakoon Description: Wave Energy Lab</p> <p>NOT AVAILABLE MORE INFO >></p>	<p>Combustion Remote Laboratory University of Moratuwa</p>  <p>Course: Master of Science in Energy for Circular Economy Instructor: Mahinsasa Narayana Description: Combustion is a chemical process between substances, usually</p> <p>NOT AVAILABLE MORE INFO >></p>
<p>Wind Energy Remote Online Lab University of Ruhuna</p>  <p>Course: Renewable Energy Technologies Instructor: Dr. K. Jayawickrama C. Kumara Description: WEROL and University of Ruhuna funded by EU Erasmus+ EUSL EnergyProject</p> <p>NOT AVAILABLE MORE INFO >></p>	<p>Coulomb Lab Universidad Privada Boliviana</p>  <p>Course: Physics Instructor: Omar Ormachea Description: The Coulombs Law remote lab is an interactive online experiment designed to demonstrate and explore the principles of</p> <p>NOT AVAILABLE MORE INFO >></p>	<p>Wind Energy Universidad Central "Marta Abreu" de las Villas, Cuba</p>  <p>Course: How to use the wind energy unit remote lab Instructor: Leonardo Agustín Hernández Pérez Description: The Wind Energy Unit, "EEE", contains an aerogenerator, in laboratory-scale,</p> <p>NOT AVAILABLE MORE INFO >></p>	<p>Steam Turbine Universidad Central "Marta Abreu de las Villas"</p>  <p>Course: How to use Steam Turbine Remote Lab Instructor: Leonardo Agustín Hernández Pérez Description: This Lab is based in The Computer Controlled Steam Turbine, "TTVC".</p> <p>NOT AVAILABLE MORE INFO >></p>	<p>Solar Energy Universidad Central "Marta Abreu" de las Villas</p>  <p>Course: How to use EE-KIT2 Unit with ESR Grid Simulator Instructor: Leonardo Agustín Hernández Pérez Description: The EE-KIT2 unit has been designed to demonstrate the operation of an</p> <p>NOT AVAILABLE MORE INFO >></p>

What about Quality of learning material

- Each Module goes through a [Quality Improvement Process \(QIP\)](#)
 - Various “scans” to ensure basic content (e.g., author’s information, Intended Learning Outcomes, number of ELHs, keywords, etc.)
 - Scans on the quality of the content
- Review process in two phases
 - Self-review by the author of the Module (Basic badge)
 - Peer-review by educators from the EEDA network (Bronze, .. Gold, Diamond badge)

EEDA QIP Tool

*Self-review & Peer-review Based upon **EIT Label Handbook** adapted to needs of emerging regions
(European Institute of Innovation and Technology)*

Digital Educational Resources Quality Assurance Toolkit
Self assessment for quality Feedback/Error Reporting for this tool
Please note that you can only use educational resources created by you or in which you are a co-author

Digital Learning Resource URL
Learnify player mode link: <https://time.learnify.se/l/show.html#att/XXXX>
<https://time.learnify.se/l/show.html#att/1V23> x Check the digital learning resource

SA002-T20L02CM07: Aeroelasticity

Module Title: Aeroelasticity Module Abstract: This Content Module includes 2 video lectures addressing aeroelastic design of compressor and turbine b ...

7 Keywords identified:


- thermodynamic cycles
- mechanical work
- efficiency
- entropy
- enthalpy
- turbomachinery design
- aeroelastic design

ELH: 4 h EQF: 7 BTL: 1 SMCTS: 0.15

Module
Last updated 24 days ago (02/03/2022)

Learnify

You cannot start the self-assessment for quality because the learning resource is missing essential information! There are 1 problems identified. Please check the **CRITICAL** labels



Metadata

- Intended Learning Outcomes ATTENTION
- Assessment GOOD
- Abstract, Uniqueness and Societal Relevance GOOD

EXPLORE Energy Community Network and Quality Framework

Quality Assurance Toolkit

Self evaluation of SA002-T20L02CM07: Aeroelasticity

Basic Scan

- Learning Content Scan
- Multimedia Scan
- Assessment Scan
- Certificate Quality Scan
- Overall Quality Scan
- Results

Module: SA002-T20L02CM07: Aeroelasticity

Basic Scan

Basic Scan measures the quality of the information provided under the important parameters at the introduction stage of the Module (Activity 1).

0% complete
You answered
0 out of 16
criteria

[Scan Centralized View](#) →

Your activity is saved automatically as you proceed

Answer all: Not Applicable No Yes

Criterion 1. Is there a clear SA/T/L/CM/AM identification number? REQUIRED

Choose your answer: Not Applicable No Yes

DESCRIPTION

The coding system for the SA/T/L/CM/AM identification number is "SAxxx-TyyLzzCMdd: "

QIP: Results and badges

Self Assessment Compliance for Quality-Overall Results

The overall compliance is calculated as the percentage of fulfilled criterions for quality.

■ Compliance
■ Non compliance

0%
Compliance
Overall

Answer distribution

Answers	Count of answers	%
Yes		0%
No		0%
Not Applicable		0%
Unanswered	62	100%

Needs Your Attention

Compliance 0 Unanswered 62

Unanswered Criterions

Unanswered criterions can indicate a potential compliance issue with the learning resource. You should answer all criterions; if they are not applicable to your learning resource please use **Not applicable**

There are 62 unanswered criterions identified

Criterion	Scan
To avoid that all learners receive the same questions, and that learners receive different questions in each attempt, it is recommended to have more questions than the ones presented in each attempt. Have this been considered when designing some of the FAs?	Assessment Scan Go to this criterion

Introduction about Module

Foreword

Dear Learner,

This Module, titled "Light Water Reactors", contains 6 parts:

- A part titled "Overall principles and designs".
- A part titled "Balance Of Plant".
- A part titled "Thermal efficiency".
- A part titled "Pressurized Water Reactors".
- A part titled "Boiling Water Reactors".
- A part titled "Nuclear reactor safety".


In the light of the pedagogical methodology "student-centered education" requesting personal commitment and active participation by the learner, each Module is built up around a set of voluntary (like watch, read, etc.) and compulsory (multiple choice, open-ended, calculation, ...) activities in which the learner can self-determine the progress.

The learner is recommended to go through, in sequential order, the different parts and the associated activities throughout this Module.

You can have a look at any time at the entire structure of the Module, all parts and their contents by clicking on the menu button in the top left corner.


Intended Learning Outcomes

explore Energy Digital Academy
Quality Badge for Digital Learning Resources



This educational resource has gone through an extensive quality assessment process and fulfills all the relevant quality criteria for digital learning resources

For more information scan the QR code below



After peer-review



Great work! The learning resource has passed the initial quality checks!



The learning resource satisfies the compliance requirements and you can invite external reviewers for quality.

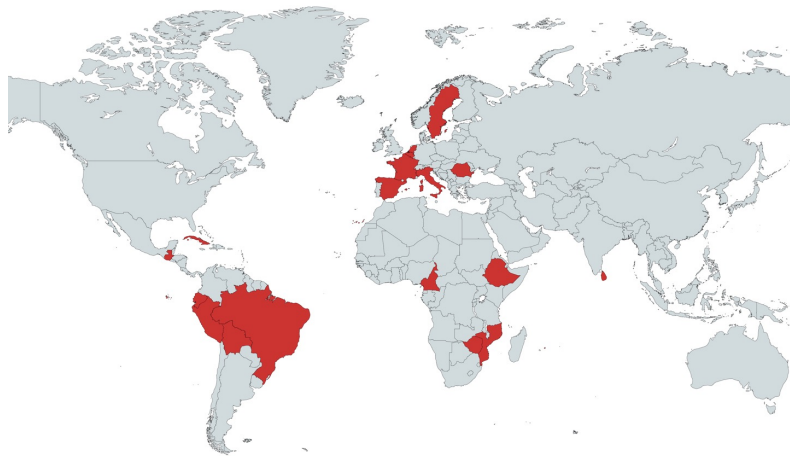
Please note that inviting external reviewers function is not yet available. Your self-evaluation results are saved and you will be able to come back later and invite external reviewers.

Your learning resource earned the Standard Quality Label! Congratulations!

[Download the quality badge](#)

- The badge is accessible to everyone and contains all the necessary "Meta-data" for quality.
- Next step: Include feedback from students

The EEDA Family



Joining forces to create a global educator-to-educator network
to modernize student-centered digital education

Conclusion

- A framework for modernizing digital education through collaboration and active learning (pilot in Energy)
- Built up around “small learning resources” (Modules)
- Educators can co-create, use, re-use, modify, translate the available learning material to build courses/programs
- Active learning methodologies as the core of the framework (flipped-classroom, challenge-based learning, and remote labs)
- Peer-review is key to ensure quality
- Focus on learning, not on teaching

EU-BEGP Partners



UNIVERSIDAD NACIONAL DE INGENIERÍA



PONTIFICIA UNIVERSIDAD CATÓLICA DEL PERÚ

- 3 Universities in Bolivia (UPB, UMSS y UMSA)
- 2 Universities in Ecuador (ESPOL, EPN)
- 2 Universities in Guatemala (GALILEO, USPG)
- 2 Universities in Peru (UNI y PUCP)
- 2 Universities in France and Spain (UPC y U. Bordeaux)

Thank you!

Q&A

- Contact: Prof. Alex Villazón (avillazon@upb.edu)
- EEDA coordinator: Prof. em. Torsten Fransson (fransson.kth@outlook.com)
 - Soon released: <https://eeda.academy>