



Train2Sustain Teachers' Guide

Welcome to Train2Sustain

With this teacher's guide we hope to facilitate you as a teacher with materials, background information, pictures, videos, guizzes, and a lot more, for you to use right away in you education.

Lots of materials is there as a pool of possibilities and we hope it might make it easier and somewhat more comfortable for you as a teacher when you begin teaching in sustainability. The materials are there to support you and make you feel more confident in teaching, sustainability, circular economy, and lean, and of course you can add you own parts maybe from a more local, regional, or national perspective in your area and country, hopefully with inspiration from what you find on the platform already.

Train2Sustain offers you a lot of different materials ready to use and you can take it directly into your classroom or elsewhere and use it as you find best for you and your students building capacity and confidence of teachers/trainers in teaching sustainability and circular economy combined with Lean principles in innovative ways.

The team behind Train2Sustain wish you great pleasure and fun using these materials together with your students.

_	٠.,	ľ	y	•

Train to Sustain

- developing capacity to teach sustainability in VET 2022-1-FI01-KA202-066632

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein





Content:

Visual overview of materials	4
Purpose of the Teachers Manual:	5
Welcome to Train2Sustain	5
International Approach & SDGs	5
Project Train2Sustain	6
Background and context of Train2Sustain	6
Definitions:	7
Detailed Explanation:	7
VET knowledge and skills	8
Pedagogics:	8
How to use the materials in the environment?	8
The target group - 15 - 19 years VET students	8
Prerequisites and differentiation	8
Background knowledge for you as a teacher	8
Access to the Materials	9
H5P	9
Microsoft Sways	11
All other materials	12
Equipment and licenses	12
How to monitor / follow your students	12
Basic Theory Training Package	13
Learning Materials for Teachers	13
Contents of the Learning Materials	13
How to access the Learning Materials	15
MS Sway Presentations for Students	15
Contents of the Sway Presentations	15
How to access the Sway Presentations	15
Structure of the Presentations	16
Adapting Presentations to one's own Needs	17
Activity toolbox	18
Content of the toolbox	18
Structure of the Learning Activities descriptions	20
360° Virtual Environments	21





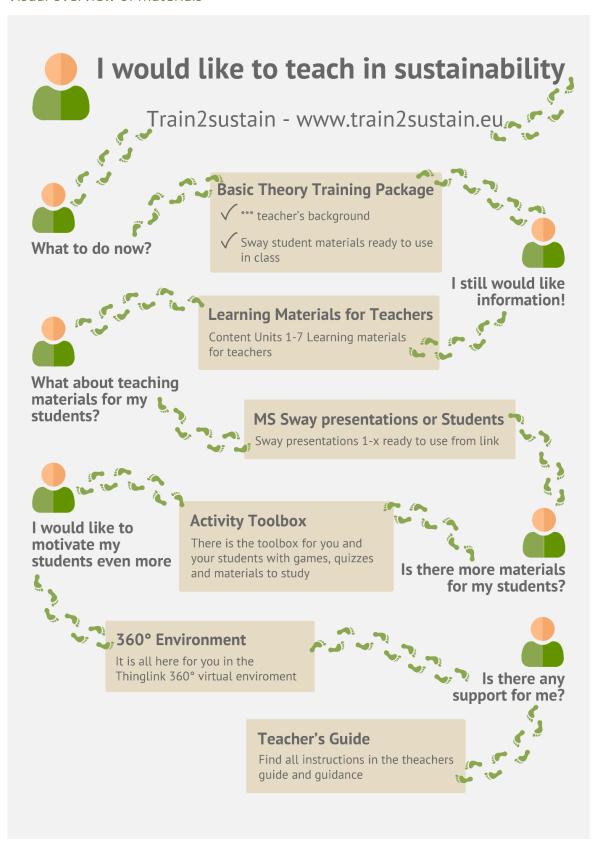
Closing remarks	. 29
Supporting materials	. 29

On the picture below can find a visual overview of the materials and how they interact with each other. Enjoy!





Visual overview of materials







Purpose of the Teachers Manual:

Welcome to Train2Sustain

With this guide the project team behind Train2Sustain hope to facilitate you in your own sustainable projects and teaching by giving you access to lots of materials, pictures, films, quizzes and more - all free to use.

You will be able to find lots of background materials for you as a teacher enabling you to study a little more about the different themes as a preparation for you and your colleagues. You will also find many links to all sorts of information for every chapter.

All the materials and the Train2Sustain environment can be used in various ways:

Your students can individually work their way through the virtual environment in their own pace
and motivated by their own interests
You can have a more classroom-based approach making your class work in minor groups
The Train2Sustain environment can be a part of a bigger project at your school
You can use elements of it for individual student project
And many more ways

But the overall benefit of these materials is:

if you have not much experience in teaching about sustainability - you can start here. Lots of materials are there - ready for you to use.

The Teacher's Guide you can also find as an interactive book: https://www.train2sustain.eu/instructors/teachers-manual/ and here you can find direct links to various videos.



International Approach & SDGs

All the materials in Train2Sustainar e developed by partners from 4 European countries and therefor you can also find information, pictures, and much more representing Europe and sometime from all over the world.

With this international approach you might also find the materials useful in your language lessons in e.g.: German, Spanish, Finnish, English and Danish.





Working with such a huge theme as sustainability from an international perspective gives your students a possibility to learn the complexity of it, and that you cannot just understand it from you own individual and/or national position - but it's a world-wide approach and understanding.

"The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace, and justice. Learn more and take action". (un.org)



Project Train2Sustain

Background and context of Train2Sustain

Dear reader, welcome to the teachers' guidance which we have made to support you in your "sustainable" education. We hope you find it inspiring and helpful in your teaching.

This project has it background in, according to EU, the ambitions of the UN Sustainable Development Goals should be mainstreamed into education, training and learning policies. Innovation and entrepreneurship should be encouraged and promoted if we want Europe to compete in the global race. The recently launched Green Deal part of European Commission's strategy to implement the United Nation's 2030 Agenda and the sustainable development goals integrates, among other elements, the mobilisation of industry towards a clean and circular economy. This can contribute to innovation, growth, and job creation. At the same time circular economy and Lean philosophy are claimed to have compatibility.

Based on this we see that the areas of Sustainability and Circular economy combined with Lean are knowledge and skills that are essential to teach VET students.

Objectives in the project

- To build capacity and confidence of teachers/trainers in teaching sustainability and circular economy combined with Lean principles in innovative ways
- To provide sustained professional development that disseminates the expertise of the partners across the partnership and encourage synergies with organizations in different VET disciplines and different countries





- To increase capacity of each partner to develop sustainability issues on an organizational level and to increase the cooperation with working life on these matters.
- To spread the knowledge and skills of using different digital skills and tools between partners

Preparing VET students to the labour market, jobs, and carriers is objectives in the project together with the education to citizens in a democratic local, national, European and worldwide world.

Definitions:

The main topics of the learning materials are sustainability, circular economy, and Lean management. Within the scope of this project, we define these terms as follows:

Sustainability

"Meeting the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations Brundtland Commission, 1987)

Circular Economy

An economy that focuses on extending products' lifecycles and avoiding wastes

Lean Management

A management system that aims at organising processes within a company as efficiently as possible, in other words with as little effort as possible

Detailed Explanation:

Sustainability

Sustainability is defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations Brundtland Commission, 1987). Within this project, we put focus on all three pillars of sustainability: environment, economy, and society, thus, when we are saying that something is sustainable, it must be environmentally friendly, it must advance economy and people must be treated equally and respectfully.

Circular Economy

By circular economy we understand an economy that focuses on extending products' lifecycles and avoiding wastes. Thus, resources and products are used again and again to keep them in the value chain as long as possible. Instead of throwing products away (as it is done in a linear economy), they are repaired, re-used, re-manufactured, shared and recycled. This results in protecting the environment and saving raw materials.

Lean Management

Lean Management is a management system that aims at organising processes within a company as efficiently as possible, in other words with as little effort as possible. Wastes are reduced to a minimum and





at the same time, quality is increased through a constantly search for improvements. Because avoiding waste and respect for people are priority, it is an approach that can be well related to sustainability and is therefore part of our learning materials.

VET knowledge and skills

We find that the areas of Sustainability and Circular economy combined with Lean are knowledge and skills that are essential to teach VET students. It will develop their responsibility as citizens and employees and the knowledge will also give possibilities to entrepreneurship, innovation, and jobs. we also think that showing sustainability awareness the attractiveness of VET educations might increase.

Pedagogics:

How to use the materials in the environment?

You can as a teacher use these materials in many ways; a few hours, one day, or for a longer time if you are having bigger projects with lots of activities.

You can have your students working individually with the materials, in bigger or smaller groups.

The target group - 15 - 19 years VET students

You might find materials and questions and tasks that you think is too comprehensive for your students and classes. In this case it is possible for you to select parts of this material or to reformulate the questions and tasks for your students. It will usually be easier for you to scale down rather the having to add and work out more complex questions and tasks.

Prerequisites and differentiation

Some students will learn about sustainability and SDGs for the first time when they start their VET education and training, and some students will be more experienced having had "sustainable" projects in primary and secondary school.

Train2Sustain offers possibilities for a more individual approach to learning and the students can be challenged in many ways according to their level og knowledge and previous experiences within the topics.

Background knowledge for you as a teacher

The learning materials in the chapter "Framework and Theory" were created to support teachers and trainers in further developing their competences in relation to sustainability, circular economy, and Lean. The aim is to provide teachers and trainers with the knowledge they need for teaching their students. The contents are related to a very basic level of knowledge, so you do not have to have any previous knowledge in the areas of sustainability, circular economy and Lean.

Trades in focus

These VET	trades are	in focus	in this	learning	environme	nt؛

	Home environment
	Hospitality & Retail
	Building Industry
П	Manufacturing & Technical Fields

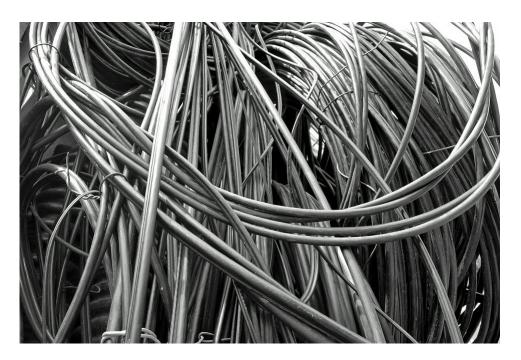




The selection of these is based on the partners' key competences in the project.

If you would like to focus on other trades these materials might give you inspiration to add more content to your own education and students.

Access to the Materials



Don't worry it's easy just follow the below information and instruction

H5P interactive games, Microsoft Sway presentations, documents are fully reusable in your own environments. Following instructions help you to take all advantages from materials.

H5P

H5P has several ways to be used.

1. If you do not have LMS or platform to copy, you can always use materials on Train2Sustain website at https://train3sustain.eu.

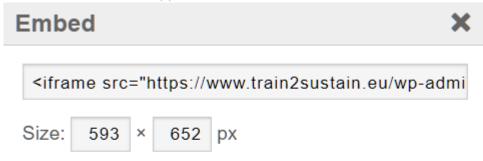


- 2. If you have a website, learning platform without H5P support or any platform to add HTML Embed codes, you can always copy embed code from H5P elements on Train2sustain website.
 - a. Locate the Embed button at lower left corner of element





b. Follow instructions and copy the code

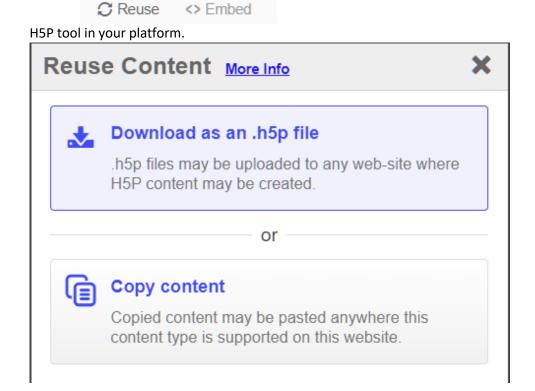


Hide advanced

Include this script on your website if you want dynamic sizing of the embedded content:

<script src="https://www.train2sustain.eu/wp-conte</pre>

- c. Copy and add code to your site.
- 3. If you have LMS or platform as WordPress with H5P support, you can always copy H5P file and add it to your site with H5P tool.
 - a. Locate the Reuse button at lower left corner of element
 - b. Follow instructions on screen ad download H5P-file or copy the content and add it to your



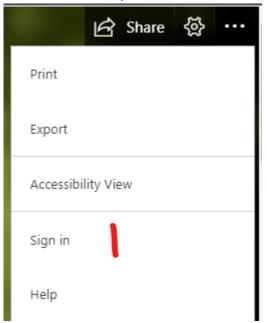




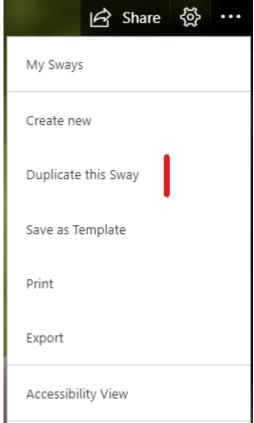
Microsoft Sways

All Sways are open to use and copy for any use. There are following ways to operate

1. All Sways published by Train2Sustain project are set to allow others to duplicate content.



a. On menu sign in with your Microsoft account



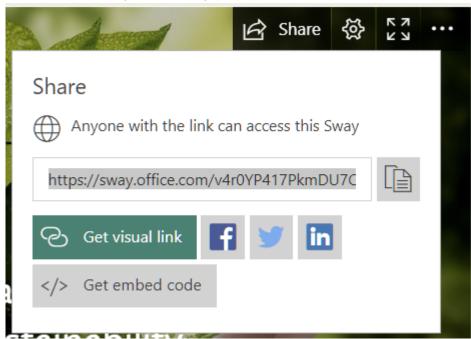
b. On menu select duplicate





c. After duplication you have content in your own Microsoft Sway where you can edit content and share and forward it to your users.

2. You can use share options in Sway



3. You can always use content via Train2Sustain website.

All other materials

- 1. All documents and downloadable PDF's, files and content is free to use.
- 2. Videos from YouTube are under CC-0 or CC-BY licence.
- 3. You are always welcome to modify and update your own copies of materials.

Equipment and licenses

You do not need any licenses to use content. When copying and editing content you need a platform which support H5P, Microsoft Sway or any provided materials. You need Microsoft account to copy Sways and edit your own copies.

How to monitor / follow your students

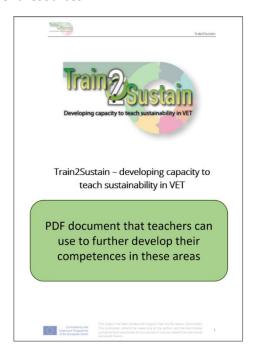
You need LMS or other platform such as WordPress or Drupal to save attempts of students. H5P activities are gradable and under completion tracking if enabled in your system. Sway files in your own platform saves reading count and basic statistics of using it.

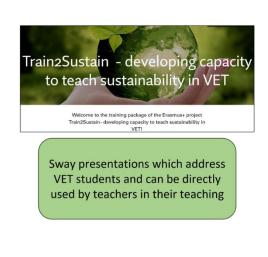




Basic Theory Training Package

The first project result consists of learning materials about sustainability, circular economy and Lean. They were developed to support teachers and trainers of the VET sector in their teaching. This output consists of two different resources:





The chapters within these two documents are the same. *The difference between them is the target group*. The PDF file is addressed to teachers and trainers so that they can further develop their competences in the mentioned areas. The Sway presentations can be directly used by teachers and trainers in their teaching, as they are addressed to students.

Hint: Both resources are ready to use materials. So, you can directly use them for your own learning or for your teaching in a class.

Learning Materials for Teachers

These learning materials were created to support teachers and trainers in further developing their competences in relation to sustainability, circular economy and Lean. The aim is to provide teachers and trainers with the knowledge they need for teaching their students. The contents are related to a very basic level of knowledge, so **you do not have to have any previous knowledge** in the areas of sustainability, circular economy and Lean.

Contents of the Learning Materials

The learning materials consist of 7 content units (CU) that cover different learning objectives. You can find an overview of them in the following:





CU1 - Introduction

After completing this content unit, you will be able to:

- decide which content units you would like to learn
- use these learning materials and increase your competences regarding sustainability, circular economy and Lean by using them.

CU2 - Sustainability

After completing this content unit, you will be able to:

- · define sustainability and relating terms.
- describe how our behaviour influences the environment and how this will progress over the next years if there are no counteractions.
- explain different international agreements and certificates regarding sustainability issues.

CU4 - Sustainability in Practice

After completing this content unit, you will be able to:

- act sustainably as a consumer/in private life.
- explain how to act sustainably and how to promote sustainable actions as a company.
- describe how to reduce one's carbon footprint and how to generate positive impancts on the environment.
- explain how Industry 5.0 contributes to a more sustainable world.

CU6 - Lean Management

After completing this content unit, you will be able to:

- describe Lean and the Lean principles.
- explain why the 5s are that important for Lean management.
- identify and eliminate the 7 (8) wastes of Lean.
- describe how Lean can support sustainability.

CU3 – UN Sustainable Development Goals

After completing this content unit, you will be able to:

- explain the SDGs and their framework conditions.
- describe how different European countries are working on the SDGs and which progress has been made.
- mention the future challenges in relation to fulfilling the SDGs and how they can be managed.

CU5 - Circular Economy

After completing this content unit, you will be able to:

- define circular economy and explain what the European Action Plan stands for.
- mention the benefits and challenges when implementing circular economy aspects.
- point out diverse actions can be set in order to contribute to a circular economy.
- describe how circular economy is integrated in different European countries.

CU7 – Sustainability, Circular Economy and Lean in Education

After completing this content unit, you will be

- able to:explain which conditions are needed in
- implement training courses in a sustainable way.

order to include sustainability in education.

 describe how sustainability, circular economy and Lean can be integrated in training courses.

All content units are structured in the same way:

First you can find a short introduction, afterwards a lot of content about the different topics is provided, and at the end, a short summary is included. Each content unit consists of different text passages, pictures, video links and reflection questions. You can also find some examples of how this theoretical information is transferred to practice and to different industries.





The **content units** are **independent from each other** which means that it is possible to learn only some of the units. You can learn about the contents you are interested in, and skip those you are not interested in.

How to access the Learning Materials

The learning materials can be downloaded as PDF file from our project's website:

https://www.train2sustain.eu/ https://www.train2sustain.eu/instructors/teachers-manual/



MS Sway Presentations for Students

To support teachers and trainers in their courses, these Sway presentations were developed. They are addressed to students, so they can be **directly used in teaching-learning-settings**.

Contents of the Sway Presentations

The content units are the same as in the learning materials for teachers and trainers, and the contents are very similar. But as the target group of these presentations are VET students, the presentations are kept simple and contain many pictures, graphics and videos. In addition, a short assessment activity can be found at the end of each content unit where students can check their knowledge.

How to access the Sway Presentations

By clicking on this link, you can access the Sway presentations: https://sway.office.com/SqccBSfm8gkdJJ5d?ref=Link







Structure of the Presentations

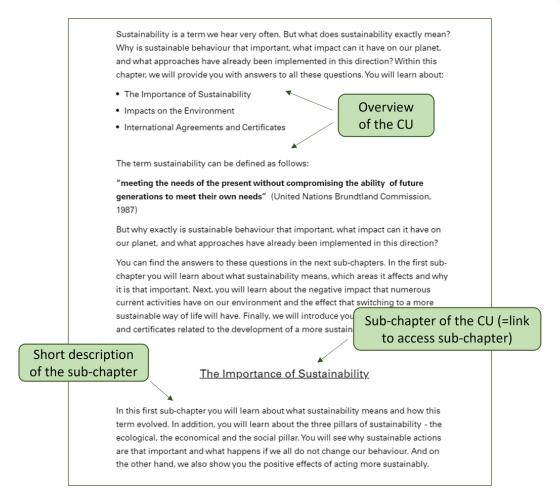
You will find a short overview of the contents and learning objectives of the Sway presentations, and you can choose which presentations you want to show to your students. By clicking on the links (underlines words – as you see below), a new window with the corresponding content unit opens.



After clicking on the link, you are forwarded to an overview of the content unit you are interested in, and you can find again some more presentations for each sub-chapter of this unit:







Within the presentations, you can find diverse media and interactive tools. Videos are directly embedded to the Sways, so they can be watched within Sway. Sometimes you can find cards like on the right side. You or the students can go through all the cards by clicking on them.



When you are finished with one presentation, you can close the window and you are back on the overview page again.

Adapting Presentations to one's own Needs

If you would like to adjust the presentations according to your needs, you can copy the presentations to your Microsoft account and edit them there.





Activity toolbox

Materia	als you will find in the toolbox
0	Aspects and purpose the materials
0	Understanding and promotion of problem solving, innovation and entrepreneurship in you
	training and education
Models	for activities:
0	Project learning
0	Problem based learning
0	Case studies
0	Games
0	Innovation camps
0	Learning by international collaboration
Group	or individual student work
Genera	l materials for VET
Usage o	online or download

Learning activities

☐ See chapter on pedagogics

The second project result consists of innovative, experimental, and inductive learning activities to be carried out in groups or as an individual. The activities are interconnected with the Basic Theory Training Package (IO number 1) and were conceived to develop a deeper understanding of sustainability and circular economy facilitated by Lean.

Content of the toolbox

The Electronic Toolbox consists of the following 12 learning activities, each one related to one Content Unit (CU) as defined in the Basic Theory Training Package, applying different pedagogical methods:

NR	ACTIVITY NAME	Organization	Group/Ind.	Method	Linked with CU
1	Sustainability Profiler	Face-to-face	Group	Game	CU 1
2	A day without electricity	Face-to-face	Group	Experience	CU 2
3	My way to a more sustainable future	Face-to-face	Group	Project	CU 2
4	SDG upside down	Face-to-face	Group	Headstand method	CU 2
5	Sustainable Shark tank	on-line or face-to-face	Group	Project	CU 2





6	Sustainable occupations news	on-line or face-to-face	Group or individual	Research	CU 3
7	Company's webpage	Face-to-face	Group	Research	CU 3
8	Ecological footprint	on-line or face-to-face	Individual	Research	CU 3
9	Lifecycle analysis	Face-to-face	group or individual	project work	CU 5
10	How to extend a product's lifecycle	Face-to-face	group or individual	project work or case study	CU 5
11	Lean ballpoint pen game (sustainability version)	Face-to-face	group	simulation game	CU 6
12	Waste analysis	Face-to-face	group or individual	case study	CU 6

The PDF file for teachers and trainers developed under "Basic Theory and Training Package" identifies with a grey square entitled "Practice" (see example below), where the different learning activities can be used in class with the students (see Basic Theory Training Package chapter) so that they can further develop their competences on the topic under study.



Train2Sustain

Practice

To give your students a better understanding of Lean issues, you could play the pen game (activity A11) in your classes. It is about a production line of pens that should be improved by the students in relation to Lean issues.

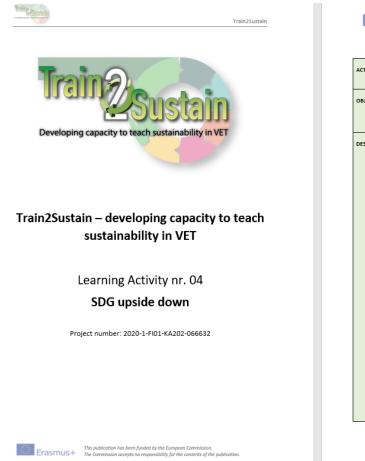
You can find the instructions as well as supporting documents of this activity A11 "Pen Game" here: https://www.train2sustain.eu/instructors/

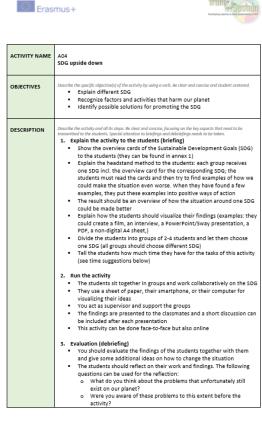
Hint: You could play round 1 of this game right here at the beginning of this Lean content unit where the students do not have any information about Lean. But it is suggested to play round 2 and 3 after learning these Lean contents so that it is easier for the students to find efficient solutions within the game.





Each activity can be used independently and is described in a PDF document:





The PDF file is addressed to teachers and trainers so that they can use them to deeper and consolidate the understanding of their students in sustainability, circular economy and Lean.

Hint: The resources are ready-to-use materials. So, you can directly use them for preparing your training sessions and to run the activities in a class.

Structure of the Learning Activities descriptions

Each learning activity is described in a PDF document, all of them containing the following descriptors:

ACTIVITY NAME - Identification of the activity, including an activity code.

OBJECTIVES – Description of the specific objective(s) of the activity, which should be clear, concise, and student-centred.

DESCRIPTION – Includes the description of the activity and all its steps, concisely, focusing on the key aspects that need to be transmitted to the students. Includes useful information for the activities' briefings and debriefings.





TIME TO PLAY – Identification of the necessary timing to implement the activity, including preparation, briefing, activity and evaluation times.

INDIVIDUAL or **GROUP** - Identify if the activity should be run individually or in a group(s) and specifies the number of students per group and the different roles (including the teacher role). Also defines extra roles for the students in excess.

MATERIAL FOR TEACHER - Specifies all the material the teacher will need during the activity.

MATERIAL FOR STUDENT - Specifies all the material the students will need during the activity and for each role, if applicable.

LAY OUT - Describes the room(s) layout that is necessary for the activity.

Some activities need supporting tools (e.g.: PowerPoint presentations, instructions for the students, digital apps/tools, other specific material). In those cases, this information is mentioned in the "Material for Teacher" or "Material for Student" descriptors and added as an annex to the pdf document or identified with a link, in case of being an on-line tool.

How to access the Learning Activities

The learning activities descriptions are available on the Train2Sustain project's website:

https://www.train2sustain.eu/ https://www.train2sustain.eu/instructors/



360° Virtual Environments

- ☐ The virtual learning environments facilitates independent, individual e-learning that the students can explore on their own
 - Four digital virtual 360 environments from different industries
 - Manufacturing
 - Hospitality and Service
 - Construction
 - Home environment and Health care
 - Learning activities built in each environment
- ☐ How to navigate from one space to another





- In the site, in the Menu, under the Learners => 360 environment You will find all four environments: http://www.train2sustain.eu/learners/3600-environment/
- ☐ Where to find the materials
 - o In the main page of each environment, you will find several different 360 environments



Construction environment







Manufacturing environment







Service environment





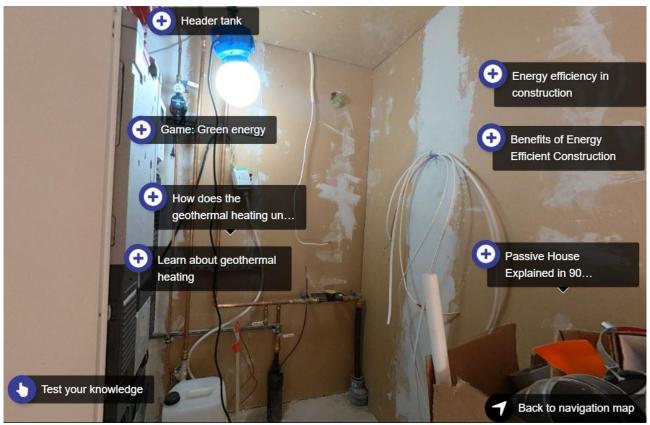


Home environment

• There are different hot spotted materials in different rooms of each environment, for example in the Construction site's Control room:







Example of hotspots

- You can scroll through the 360-picture and find different hotspots anywhere.
- In the lower left corner, you can reset the view to its starting point
- In the higher right corner, you can watch the 360° picture with its contents full screen
- The plus-marked hotspots include material, texts, pictures, videos, and tasks
- Some hotspots include icons as follows:
 - **i** for information
 - for videos

 - $% = 10^{-6} \, \mathrm{g}^{-1}$ for quizzes
- The pointer-marked hotspots include tests
- The arrow-marked hotspots take you to other parts of the environment
- ☐ The type of materials you can find:





Texts

×

Geothermal heating systems are becoming increasingly popular as people look for more efficient and environmentally friendly ways to warm their homes. Also called ground source heat pumps, these solutions harness renewable energy to help you keep your home at a comfortable temperature year-round.

Click here to watch a video about how Geothermal heating works.

Learn more about Geothermal heating from Wikipedia

□ Links

Header tank

X

Energy efficiency in construction

How to set energy efficiency standards for new buildings (c40knowledgehub.org)

Passive house explained in 90 seconds

Sustainable growth agenda - framework of energy system (Finland)

Recovery and resilience plan - Energy efficiency, green heating and CCS (Denmark)

Recovery and resilience plan / CTD / Energy efficiency in buildings/ Investments for energy efficiency in buildings (Portugal)

<u>Austrian Recovery & Resilience Plan / 1.Sustainable construction (Austria)</u>





Pictures



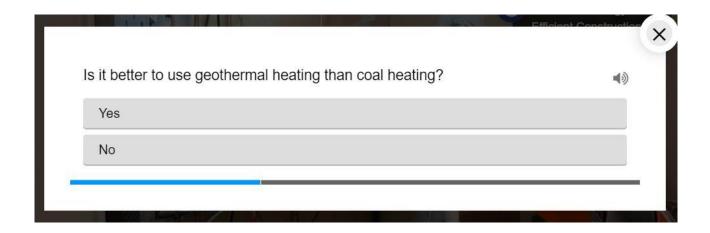
□ Videos







Tests and tasks



- ☐ Focus on sustainability, circular economy and lean
 - 360 pictures show the material in sustainability, circular economy and lean in real environments.
- ☐ Possibilities to differentiate for the learner
 - o Different materials available for different learners, from texts to videos and quizzes.
- ☐ Examples on how to make your students explore on their own.
 - o All IO3 material can be used for students to explore on their own.

Closing remarks

The whole team behind Project Train2Sustain wish you good luck with the materials and we hope that you will find it all very useful and inspiring. We also hope that your students will find it interesting and gives them the inspiration and motivation to active citizenship in their own school, local community, their country – and maybe even in Europe.

Supporting materials

In this chapter you will find materials with more information and background about Sustainability, Lean, and Circular Economy.

It could be useful for you in your further preparation of your education and if you would like to develop more teaching materials yourself.

Enjoy!

Everyone responsible for uploading the materials from other IOs - below.