CIRCULAR ECONOMY SKILLS AND AWARENESS RAISING

Erasmus+ (2020-1-PT01-KA202-078759)

Course Programme in Circular Economy for VET Students

www.cesar-project.eu

Contents:

1. The Course Programme Goals

The main objective of the CESAR Course in Circular Economy for VET Students is to help the schools and the teachers to convey and aware the students to the Circular Economy concepts and activities, contributing to dissemination of information and creation of social perception related with the Circular Economy.
As the transition from the linear economy to the circular economy offers a wide range of new jobs for young people entering the labour market, it is necessary re-skill the actual and future workforce, aligning it with the needs and challenges of this new economic model, where different types of circular activities require specific skill-sets.
In this respect, education and training play a key role for this move towards a circular economy.

Therefore, the CESAR Course in Circular Economy for VET Students intends to:

- Raise awareness on circular economy;
- Enhance the power and benefits of circular economy;
- Promote awareness amongst teachers and students on greener methodologies and approaches;
- Establish students' initiatives to investigate local and regional problems that require sustainable and/or circular solutions;
- Enhance the students' skills for circular economy, helping to prepare the future workforce for the transition challenges from the linear to the circular economy.

In order to achieve these objectives, a set of educational and training materials have been designed and developed covering the following topics:

- Eco-Design
- Life-long Materials and Products
- Regenerative Resources
- Waste as a Resource
- New Business Models
- Digitization
- Collaboration and Changes in Human Behavior

The course in Circular Economy is addressed to VET schools and can be use by those school in their courses' curricula (as an example integrated in the citizenship and development curricular units). Furthermore, the implementation of the course content by schools can contribute to the increase of internal awareness of this economic model among the student community.

2. The Course Programme Content

Why move from the current linear economic model to the circular economy? What are the advantages? Who can deal with it? Everyone agrees that our global society is not sustainable and we all know the challenges this represents: waste, climate change, resource scarcity, loss of biodiversity. At the same time, we want to sustain our economies and provide opportunities for a growing world population. Moreover, as the circular economy is creating a wide range of new job opportunities, there is an increasing need to transfer specific skills to young people in accessing the labour market.

This course will give the opportunity to become familiar with the themes of the Circular Economy and sustainable development, as well as being trained to work in the areas of the Circular Economy.

The course has two main objectives:

i) Explore the theme of the Circular Economy: how companies can create value by reusing and recycling products, how designers can find smart solutions, and how everyone can contribute to the Circular Economy.
ii) Contribute to develop the specific skills needed to perform the tasks required by jobs closely related to the Circular Economy.

Designed for total duration of 50 hours the course program is divided in two parts:

Part 1: Introduction to the Circular Economy

1. What is the Circular Economy?
2. Understanding the Changing Needs: From Linear to Circular Economy
3. The Circular Economy and the UN Sustainable Development Goals
4. Circular Jobs on Circular Economy

Part 2: Building Blocks of Circular Economy

1. Eco-Design
2. Life-long Materials and Products
3. Regenerative Resources
4. Waste as a Resource
5. New Business Models
6. Digitization
7. Collaboration and Changes in Human Behavior

Overview of the Training Curriculum

	Modules	Topics	Duration (hours)
1.1	Introduction to the Circular Economy	What is the Circular Economy?	2
		Understanding the Changing Needs: From Linear to Circular Economy	2
		The Circular Economy and the UN Sustainable Development Goals	2
		Circular Jobs on Circular Economy	2
		Total Duration of Module:	8
2.1	Eco-Design	Eco-design definition and principles	2
		Design for the environment	1,5
		Eco-design of products	1,5
		Best practices cases and exercises	2
		Total Duration of Module:	**6**
2.2	Life-long Materials and Products	The Cradle-to-Cradle model vs Cradle to Grave Model	1,5
		Long-Life Materials within the Cradle to Cradle Model	1,5
		Best practice cases and exercises	2
		Total Duration of Module:	**5**
2.3	Regenerative Resources	Introduction to Regenerative Resources	1,5
		Key principles	1,5
		Best practice cases and exercises	2
		Total Duration of Module:	**5**
2.4	Waste as a Resource	The waste as a Resource	3
		Best practice cases and exercises	2
		Workshop: Trash art	2
		Total Duration of Module:	**7**
2.5	New Business Models	New business models definition	1
		Circular business models	2
		Best practice cases and exercises	2
		Workshop: circular business model innovation	2
		Total Duration of Module:	**7**

(Continue)

	Modules	Topics	Duration (hours)
2.6	Digitization	DigComp 2.0 - the Conceptual Reference Model	1,5
		Circular Economy and Digitization	1,5
		Best practice cases and exercises	2
		Assessment of Digital Competences	2
		Total Duration of Module:	**7**
2.7	Collaboration and Changes in Human Behavior	Introduction	2
		Workshop: Collaboration and Changes in Human Behavior	3
		Total Duration of Module:	**5**
		Total Duration of Training:	**50 hours**

3. Teaching Methods and Tools

The proposed teaching methods for this course are:

Experiental learing (learning by doing)

Experiential learning is an engaged learning process whereby students "learn by doing" reflecting on the experience.
Experiential education allows students to develop new mindsets of self-understanding through action, interaction and reflection. This approach cognitively engages students in different ways from just verbally receiving information.

The main proponent of this approach is David Kolb[1], who proposed that knowledge is built through the transformation of an experience. His process includes the integration of three elements:

- knowledge—the concepts, facts and information acquired through formal learning and past experience;
- activity—the application of students' knowledge to a "real world" experiences in order to implement and connect the dots;
- reflection—the analysis and synthesis of knowledge and activity to create new knowledge

This type of teaching method applied to the circular economy is particularly effective because, while students are gaining new knowledge on the subject, they have the opportunity to put sustainable actions in place.

There are a number of benefits from the experiential learning method application:

- it provides opportunities for students to practice and deepen emergent skills, encounter novel and unpredictable situations that support new learning, or learn from natural consequences, mistakes, and successes;
- the learner is actively engaged in posing questions, investigating, experimenting, being curious, solving problems, assuming responsibility, being creative, and constructing meaning;
- students are challenged to take initiative, make decisions and be accountable for results;
- reflection on learning during and after one's experiences is an integral component of the learning process which leads to analysis, critical thinking, and synthesis;
- students are engaged intellectually, emotionally, socially, and/or physically, which produces a perception that the learning task is authentic;

[1] https://en.wikipedia.org/wiki/Kolb's_experiential_learning

- relationships are developed and nurtured: learner to self, learner to others, and learner to the world at large.

Interactive Teaching method

Interactive teaching is a method whereby teachers actively involve students in their learning process through regular teacher-student/student-student interaction, the use of audiovisuals and practical demonstrations. Students are constantly encouraged to be active participants.

Some Interactive teaching styles that will be applied to the Course in Circular Economy are as follows:

1. Brainstorming

Interactive brainstorming is typically performed in group sessions. The process is useful for generating creative thoughts and ideas. Brainstorming helps students learn to pull together. An interactive brainstorming can be:

- Structured and unstructured
- Online interaction such as chat, forums and email
- Team-idea mapping
- Group passing
- Individual brainstorming

2. Think, pair and share

Establish a problem or a question, then pair your students. Give each pair sufficient time to form a conclusion and allow each participant to define the conclusion in his or her personal voice. Teacher can also request that one student explain a concept while the other student evaluates what is being learned. Through this style students will be engaged, communicating and retaining more information.

3. Case process

This style of teaching involves a case study format, but the process is not as rigid as a full case study training session. The focus is on learning how to solve real problems involving real people, preparing your students for life beyond your classroom. Give small groups of students the details of real cases and then ask them to develop a feasible solution.

4. Buzz session

Participants come together in session groups that focus on a single topic. Within each group, every student contributes thoughts and ideas. Encourage discussion and collaboration among the students within each group; everyone should learn from one another's input and experiences.

5. Interactive game activities

Create an interactive classroom full of interactive learning games. Games are so much fun for students since it doesn't feel like learning.

6. Q&A sessions

After each presentation of the topic, but before the formal lesson, teacher asks students to write down questions related to the topic on cards. After collecting the cards, shuffle them and read and answer the questions generated by the students.

4. The Teaching and learning materials

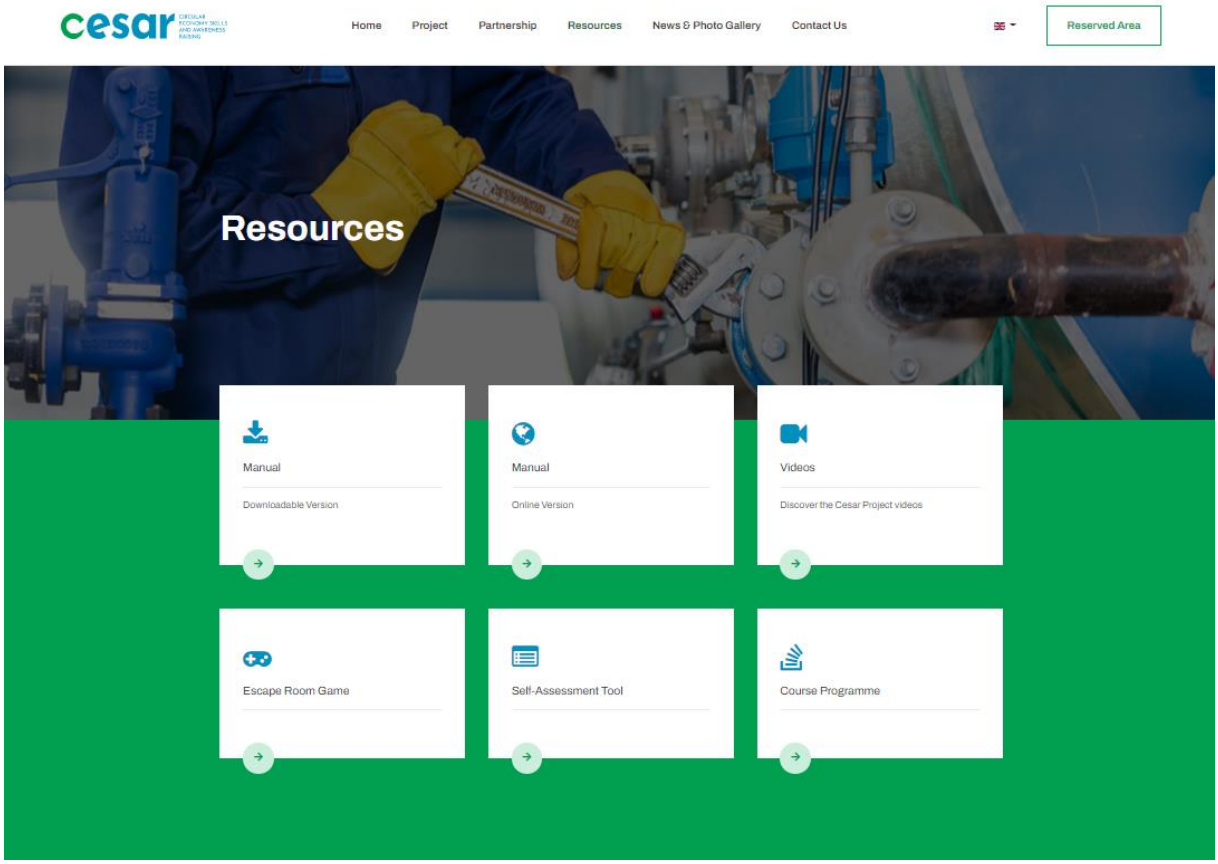
The CESAR's package of educational and training materials

The CESAR project provides a set of educational and training materials in Circular Economy: manual, skills matrix, self-assessment tool, videos and escape room game.

The purpose of these materials is to help school teachers and trainers to convey knowledge and skills, oriented towards the concrete application of circular economy principles, and to support this training course.

The materials are available in the CESAR's website:

https://www.cesar-project.eu/index.php/project-materials



1. Circular Economy Manual

The Circular Economy Manual addresses all the course modules and is available in a downloadable version (pdf) and in online interactive version.

2. Videos

A set of five educational videos presenting examples of good practices in circular economy from Portugal, Spain, Finland, Germany and Italy.

3. Escape Room Game

An escape room online interactive game to quiz and present the principles and several examples from circular economy practices.

4. Self-Assessment Tool

The Circular Skills Self-Assessment Tool, developed by CESAR Project, provides a self-assessment in circular skills, mainly targeting Vocational Education and Training (VET) practitioners.
It is composed of 3 elements: 1) the skills matrix that cross the 6 types of circular skills with the building blocks of circular economy; 2) the self-assessment questionnaire; and 3) the circular skills profile.
The user must answer to the questionnaire, marking the option that best express your opinion about the sentences (questions) presented.
After filling in the questionnaire, the score is automatically calculated and skills profile is presented.

For each type of skill the desirable profile is inside the green area. If the score is outside the green area it's necessary to improve knowledge and competencies, according to the respective circular economy blocks, to augment that skill. The further the score is from the green area the more effort is needed to reach it.

The self-assessment tool can be used as a diagnosis tool, at the beginning of the course and as an evaluation tool, after the end of the course.

cesar CIRCULAR ECONOMY SKILLS AND AWARENESS RAISING

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

CIRCULAR ECONOMY SKILLS MATRIX

	Skills	Basic Skills	Complex Problem Solving Skills	Resource Management Skills	Social Skills	System Skills	Technical Skills
		• Literacy skills (reading, writing, listening) • Mathematical skills (numbers, basic calculation, fractions etc., diagrams) • Digital literacy skills	• Research skills • Organisational skills • Planning skills, problem solving skills • Analytic skills • Consistency • Responsibility skills • Creativity • Decision making skills • Competence development skills	• Time management skills • Staff management and Team Building skills • Logistical skills, workflow and collaboration skills • Sustainability skills • Green skills	• Communication skills • Team work skills • Intercultural skills • Tolerance skills • Conflict management skills • Reliability skills • Negotiation skills • Empathy	• Judgement and decision making skills • Cost-benefits consideration skills • Systems analysis skills (how a system should work) • Systems evaluation skills (identifying measures/indicators of system performance)	• Ability/Knowledge skills (IT skills, mechanical skills, technical skills) to solve specific (scientific) tasks
Circular Economy Blocks	Eco-Design						
	Life-Long Materials and Products						
	Regenerative Resources						
	Waste as a resource						
	New Business Models						
	Digitalisation						
	Collaboration and Changes in Human Behaviour						

cesar CIRCULAR ECONOMY SKILLS AND AWARENESS RAISING

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

CIRCULAR SKILLS | SELF-ASSESSMENT SURVEY

For each question mark with an "X" (use only the X letter) the white cell that best express your opinion (strongly disagree; disagree; somewhat disagree; somewhat agree; agree; or strongly agree) about the sentence presented.

B1	BASIC SKILLS	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
		1	2	3	4	5	6
1	I can do basic mathematical calculations, including fractions and understanding diagrams that help support circular economy.						
2	I can participate in discussions regarding circular economy, presenting this subject in an interesting and engaging way.						
3	I try to be aware of the environmental footprint of the products I use and buy.						
4	I know how to use the right tools to calculate the amount of waste I produce per year.						
5	I know the importance of lifelong learning when it comes to circular economy.						
6	I know where to find information about circular economy, distinguishing fakes news from real news.						
7	I know how to apply what I have learned at school about circular economy in the real world.						
	Nº of Anwsers (a)	0	0	0	0	0	0
	Factor (b)	1	2	3	4	5	6
	Value (axb)	0	0	0	0	0	0

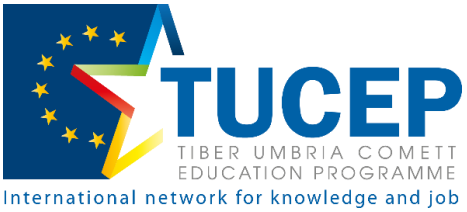
B1 Score: 0

Note: Mark with an X your anwser to each question.

Partners


AEVA


axxell


TUCEP
TIBER UMBRIA COMETT
EDUCATION PROGRAMME
International network for knowledge and job


IB


em
Education
& Mobility


CALASANZ
CALASANZ
SANTURTZI
LANBIDE IKASTEGIA