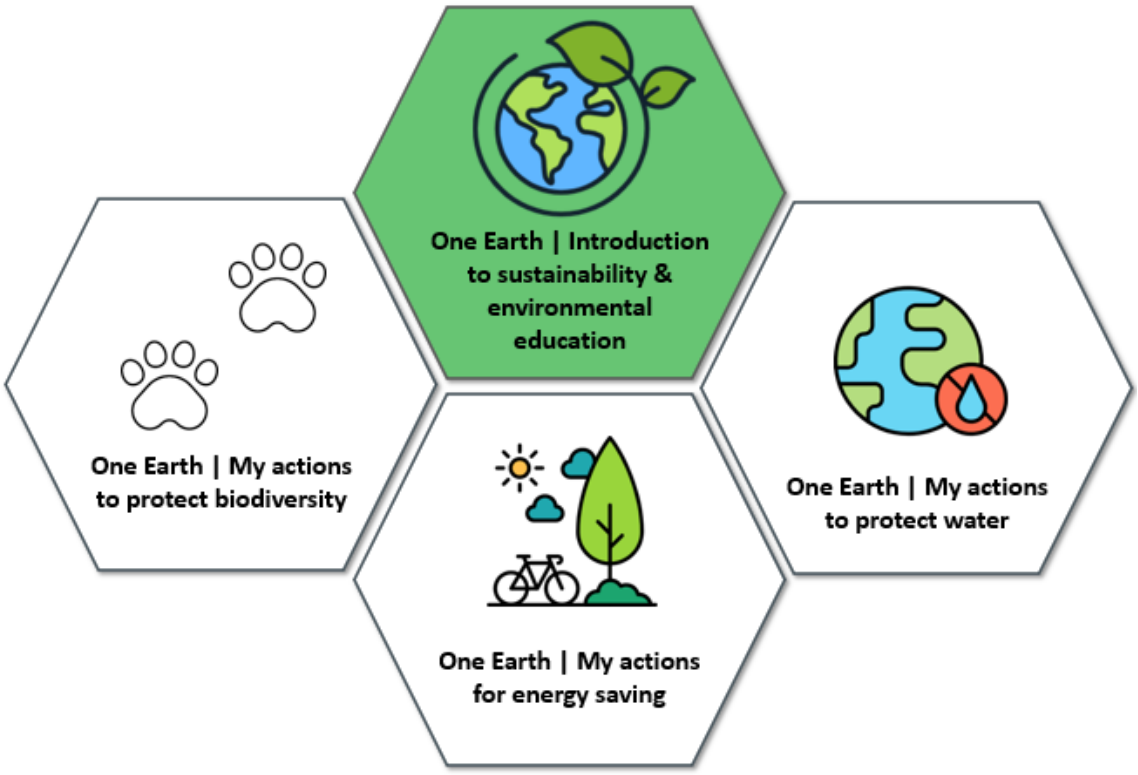
Teacher Academy Project
TEACHING SUSTAINABILITY



SUSTAINABILITY AND ENVIRONMENTAL EDUCATION

Learning and Teaching Package 3

UNIT 1. INTRODUCTION TO SUSTAINABILITY & ENVIRONMENTAL EDUCATION

BENTO CAVADAS, SANTARÉM POLYTECHNIC UNIVERSITY, PORTUGAL
ELISABETE LINHARES, SANTARÉM POLYTECHNIC UNIVERSITY, PORTUGAL
NEUSA BRANCO, SANTARÉM POLYTECHNIC UNIVERSITY, PORTUGAL
SUSANA COLAÇO, SANTARÉM POLYTECHNIC UNIVERSITY, PORTUGAL

Co-funded by the European Union

SANTARÉM POLYTECHNIC UNIVERSITY
POLITÉCNICO DE SANTARÉM

Co-funded by the European Union

Teacher Academy Project
TEACHING SUSTAINABILITY

Contents

Co-funded by the European Union

DISCLAIMER: Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or EACEA. Neither the European Union nor the granting authority can be held responsible for them.

CREDIT: Cover Photo by authors.
The icons were created by Taimoor D on Flaticon

Overview

The LTP approaches sustainability and environmental education and is organized in four units, based on a common theme: 'One Earth.' Each unit aligns with one of the Sustainable Development Goals (SDGs). In each unit different educational resources and pedagogical approaches are employed to foster primary school students' knowledge and the essential competencies related to sustainability. The aim is to enable them to take actions to protect biodiversity, promote the responsible use of water, encourage sustainable consumption and save energy.

The present Unit is an introduction to sustainability and environmental education. Unit 1 content is oriented for teachers. Teachers exploring sustainability and environmental education can have a profound impact on students and society as a whole. Exploring environmental education is crucial for teachers because it addresses a range of issues that impact the planet, society, and individual. Teaching sustainability fosters a sense of global citizenship. Students become aware of their role in a global community and the interconnectedness of environmental issues worldwide. This awareness encourages a sense of responsibility and encourages actions that consider the well-being of the planet and its inhabitants.

Unit 2 focuses on the SDG 15 | Life on Land. The SDG 15 main purposes are to protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Unit 3 also invites to discuss and reflect on practices which aim is to develop the primary school students' understanding about water being part of complex global interrelationships and systems. Different situations to stimulate the primary school reasoning about the Earth' water amount, how water is distributed and how water is used in different cultural contexts are going to be presented.

The content covered in Unit 4 of this LTP aims to improve students' understanding of the concept of energy, the distinction between non-renewable energy resources and renewable energy resources. The objective is to better understand how small individual choices for a more sustainable lifestyle can have an impact on saving energy and contribute to the adoption of energy-saving behaviours.

The materials aim to give ideas to bring them into teacher education and schools and can be adapted for various contexts and enriched further. The Unit finishes with a Follow-Up Activity for teachers to reflect on their practice in view of integrating the topic of sustainability into their practice, and includes TAP-TS Roadmap that can be seen as a visualisation of materials design, and a Template for developing teaching and learning materials with guiding questions.

Pedagogical Approach

The pedagogical approach of this unit is action-oriented learning. Starting from questioning, teachers are encouraged to research and carry out activities (hands-on and minds-on), to research information, answers and explanations for the situations or processes under analysis, eventually leading to new questions and new explorations. Through collective discussions, teachers are going to reflect about their practices on sustainability and environmental education. Reflect about students learning in activities based on sustainability and environmental education is a powerful way for teachers to enhance the learning experience about both issues. In this unit teachers will be invited to design activities that bridge the gap between classroom concepts and practical applications, reinforcing the relevance of environmental education in everyday life.

Environmental Education: Background information

The aim of this Unit is to provide teachers and student teachers situations to reflect around sustainability and environmental education. Teachers and future teachers who explore environmental education can contribute to building a sustainable future. Furthermore, environmental education provides a tangible context for various academic subjects. Teachers can connect science, geography, social studies, and even mathematics to real-world environmental challenges, making learning more engaging and relevant for students. Teachers exploring environmental education provide students with opportunities to analyze environmental challenges, think critically about potential solutions, and develop problem-solving skills applicable to various aspects of life. By imparting knowledge about sustainable practices, teachers can empower students to make informed decisions that reduce their environmental impact.

Piloting of the materials within TAP-TS

The materials of Unit 1 were piloted in classes of didactic in initial teacher education courses. The materials are also presented as a Moodle course on TAP-TS Platform - https://tap-ts.eu/course/view.php?id=13

UNIT Overview

Main Topic	Target Group	Duration	Knowledge Area/ Subjects in School	Activities	Suggestions for Possible assessment
Introduction to sustainability & environmental educational	Pre- and in-service teachers	Min 320 min	Knowledge area: Environmental education	**Start-up:** Activity 1. Connections of Sustainable Development Goals with environmental education **Development:** Activity 2. The core concepts of sustainability education Activity 3. Example of STEAM approach for Sustainability & Environmental Education **Consolidation:** Activity 4. Reflection about biodiversity, water and energy **Follow up:** Activity 5. Reflection about teacher practice	Teachers' self-reflection
Intended Learning Outcomes	**Having worked through the activities and materials, teachers will be able to:** ✓ Demonstrate an understanding of the United Nations Sustainable Development Goals (SDGs) and their interrelated nature, showcasing the ability to analyze, articulate, and propose solutions for global challenges in areas such as poverty, climate action, and social justice. ✓ Understand the relations between environmental education, sustainability educations and education for sustainable development ✓ Acquire a foundational understanding of specific sustainability themes, related with biodiversity, water and energy. ✓ Reflect about teacher practice and how to positively impacting student learning outcomes and sustainability competences development.				

Prior Competencies	Teacher previous experiences with practices related with environmental education is recommended, but not mandatory.		
Required materials	• Worksheets • Construction blocks • Laptops and smartphones • Sigle-use plastic items cards		
Cooperation/ Networking	Not applicable		
Practical Notes for Teachers	This unit is based on teacher discussion with peers.		
Addressing GreenComp	**Embodying sustainability values**		
	X	1.1 Valuing sustainability	To reflect on personal values; identify and explain how values vary among people and over time, while critically evaluating how they align with sustainability values.
		1.2 Supporting fairness	To support equity and justice for current and future generations and learn from previous generations for sustainability.
		1.3 Promoting nature	To acknowledge that humans are part of nature; and to respect the needs and rights of other species and of nature itself in order to restore and regenerate healthy and resilient ecosystems.
	Embracing complexity in sustainability		
	X	2.1 Systems thinking	To approach a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems.
	X	2.2 Critical thinking	To assess information and arguments*, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions.
	X	2.3 Problem framing	To formulate current or potential challenges as a sustainability problem in terms of difficulty, people involved, time and geographical scope, in order to identify suitable approaches to anticipating and preventing problems, and to mitigating and adapting to already existing problems.
	Envisioning sustainable futures		
	x	3.1 Futures literacy	To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future
		3.2 Adaptability	To manage transitions and challenges in complex sustainability situations and make decisions related to the future in the face of uncertainty, ambiguity and risk.
		3.3 Exploratory thinking	To adopt a relational way of thinking by exploring and linking different disciplines, using creativity and experimentation with novel ideas or methods.
	Acting for sustainability		
	x	4.1 Political agency	To navigate the political system, identify political responsibility and accountability for unsustainable behaviour, and demand effective policies for sustainability.
	x	4.2 Collective action	To act for change in collaboration with others.
	x	4.3 Individual initiative	To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet.

UNIT DESCRIPTION

Start-Up

The aim of the start-up activities is to promote teachers' reflection about the sustainable development goals.

Estimated Duration 30 min

Activity 1. Connections of Sustainable Development Goals with environmental education This is a small group activity aimed to connect the sustainable development goals with environmental education. **GreenComp Reference** *1.1 Valuing Sustainability* *1.3 Promoting Nature*	**Preparation for Activities:** Classroom space should be organized for group work. **Description** **What is the meaning of each SDG?** 1. Watch the video A look at the sustainable development goals. 2. Organize the teachers in pairs. Attribute to each pair an SDG. Then, the teachers must carefully read the SDG content on the United Nations website. 3. Each pair of teachers should discuss and creatively create a design about the relation of the attributed SDG with environmental education, using construction blocks (Figure 1).	30 min

Figure 1. Teachers using construction blocks to create a relation between an SDG and environmental education.

4. Each pair of teachers will deliver a pitch presentation lasting approximately three minutes. The objective is for each pair to elucidate the connection between the design they have created and the concept of environmental education.

Development

The aim of the development activities is to impart teachers with a comprehensive understanding of the concepts of sustainability, sustainability education, education for sustainable development and their relations.		**Estimated Duration 180 min**
Activity 2. The core concepts of sustainability education This is a small group activity that aims to promote discussion and learning about the meaning and relations between sustainability, sustainability education and education for sustainable development. **GreenComp Reference** *1.2 Valuing Sustainability* *1.3 Promoting Nature*	**Preparation for Activities:** Students should be organized in small groups. **A Note for a Teacher:** In the following activities, it is suggested that teachers engage in discussions with peers regarding various concepts related to sustainability, sustainability education, education for sustainable development, and explore how these concepts can be applied in the context of primary schools. **Description** **What is sustainability?** 1. Read the following introduction: According to Bianchi et al. (2022), *sustainability* "means prioritising the needs of all life forms and of the planet by ensuring that human activity does not exceed *planetary boundaries*" (p. 12). Figure 2 presents the planetary boundaries. 2. Discuss with your peers the following questions: • Which is the status of the seven Earth processes concerning their respective planetary boundaries? • How to approach the concept of sustainability with primary school students?	60 min

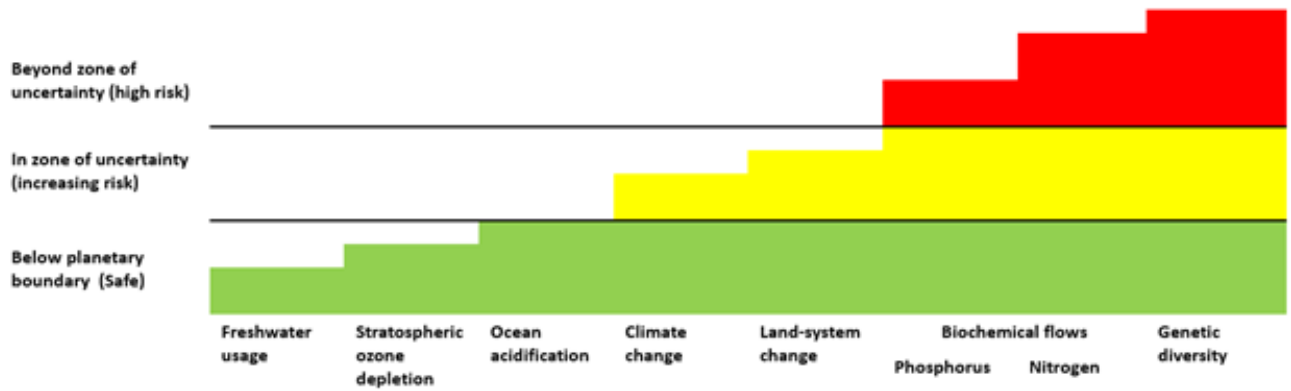


Figure 2. Status of seven Earth processes and respective planetary boundaries that can be quantified at the global level (Adapted from Steffen et al., 2015).

What is sustainable development?

1. Read the following introduction:

   Sustainable development refers to the "many processes and pathways used to stimulate development, or achieve progress, in sustainable ways" (Bianchi et al., 2022, p. 12). This concept is closely related to the seventeen *sustainable development goals (SDGs)* (UN, 2015) (Figure 3).

   The SDGs recognize that ending poverty must go together with strategies that create economic growth and address a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection (UN, n.d.).

Figure 3. Sustainable Development Goals (United Nations, 2015).

2. Watch the video What is sustainable development? to know more about the concept of sustainable development goals

3. Discuss with your peers the following questions:

   - Which Sustainable Development Goals (SDGs) have you emphasized more in your primary school classes? Additionally, which SDGs do you believe should receive more focus in your teaching?
   - How to approach the concept of sustainability development with primary school students?

How are environmental education, sustainability education and education for sustainable development related?

1. Read the text about environmental education, sustainability education and education for sustainable development on the **Worksheet. Environmental education, sustainability education and education for sustainable development** .

2. Discuss the following questions with your peers, taking into account the information provided in the worksheet:

- How can teachers assess students' conceptions of sustainability? Starting from that assessment, how can teachers promote practices that allow the development of sustainability competences based on knowledge and attitudes?
- What knowledge, skills and attitudes should be promoted to foster sustainability education and education for sustainable development?
- What are the most appropriate pedagogical approaches to sustainability in primary schools?
- How can teachers promote equity and justice for both current and future generations in the context of sustainability?
- What can be learned from previous generations about sustainability?
- How can collaborative work with community institutions be promoted in order to foster dimensions of sustainability?
- Which activities can contribute to students taking action in the community for sustainability (collective, individual and political level)?

Activity 3. Example of STEAM approach for Sustainability & Environmental Education This is a collective activity that aims to promote discussion and learning about the plastic pollution and the actions to reduce or replace single-use plastic items. **GreenComp Reference** *1.3 Valuing Sustainability* *1.4 Promoting Nature;* *2.2 Critical Thinking;* *2.3 Problem Framing;* *4.2 Collective Action* *4.3 Individual Initiative*	**Preparation for Activities:** Teacher must prepare the digital or physical resources previously. **A Note for a Teacher:** A STEAM activity is presented as an example to explore a topic of sustainability and environmental education. **Description** **How STEAM approach could be used to explore environmental issues and sustainability education?** The next activities are based on a STEAM project about plastic pollution, in the framework of Sustainability & Environmental Education: • Start-up: Present the initial 6 minutes of the video Watch ALBATROSS to the students and ask them to share their opinions about what is happening with the albatrosses. • Development: ○ Implement with students the project that is described on the video BAD PLASTICS project | Plastic pollution . ○ Ask students to analyse the poster of TOP 10 single-use plastics items found on sea shores of the European Union. ○ Ask students to analyse some ideas of the EU restrictions on certain single-use plastics. • Consolidation: ○ Ask students to write some actions to reduce or replace each single-use plastics item presented on the **Worksheet. Single-use plastics items** . Two different strategies are suggested for students share their ideas:	120 min

A) Students can write the actions on *post-it* and create an artistical installation (Figure 4).

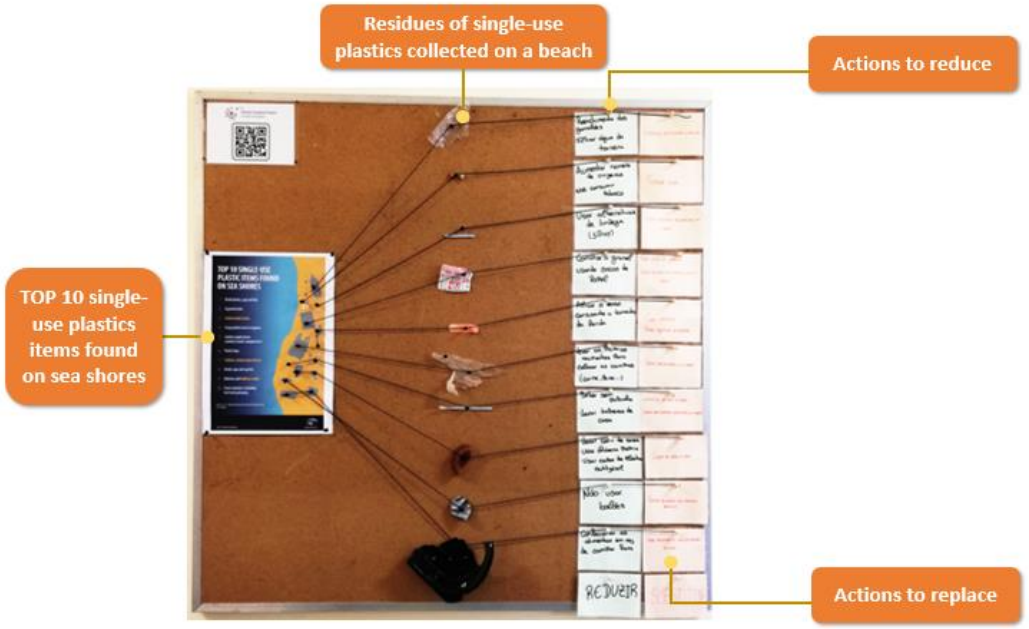


Figure 4. Example of an artistic installation about plastic pollution.

If teacher don't have items from the plastic residues collected, the carts presented on **Worksheet. Single-use plastics items** can be a substitute.

B) Students can share their ideas on a digital resource, such as Padlet® (Figure 5).

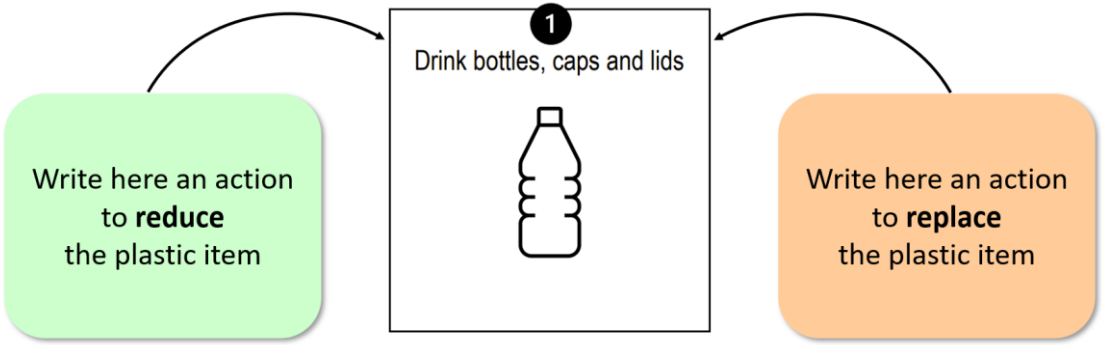


Figure 5. Examples of connections between a plastic action and actions to reduces and replace plastic item.

Follow-up:

1. Discuss with your peers the GreenComp areas and competences that could be developed with the BAD Plastic project: Plastic pollution.
2. Discuss with your peers the feasibility of implementing a similar project related to plastic pollution.

Consolidation

The aim of the consolidation activities is to promote teachers' reflection and awareness about the sustainability themes approached in this LTP: biodiversity, water and energy.

Estimated Duration 90 min

Activity 4. Reflection about biodiversity, water and energy

This is a small group activity aimed to raise the teachers' awareness of three major sustainability issues: biodiversity, water and energy.

GreenComp Reference

1.5 Valuing Sustainability

1.3 Promoting Nature

60 min

Preparation for Activities: Classroom space should be organized for group work.

Description

How can you, as a teacher, promote students' awareness of sustainability, specifically in relation to biodiversity, water, and energy?

1. Teacher should be organized in three working groups.

2. Each working group should be assigned a video from the ones listed in the table below*.

THEME	Video
Biodiversity	What is biodiversity?
Water	Are we running out of clean water?
Energy	Climate crisis solutions – Energy

* These videos are only suggestions: feel free to replace them with others more relevant to your context.

3. Then, each group should discuss the video content assigned, to answer the following questions (Figure 6).

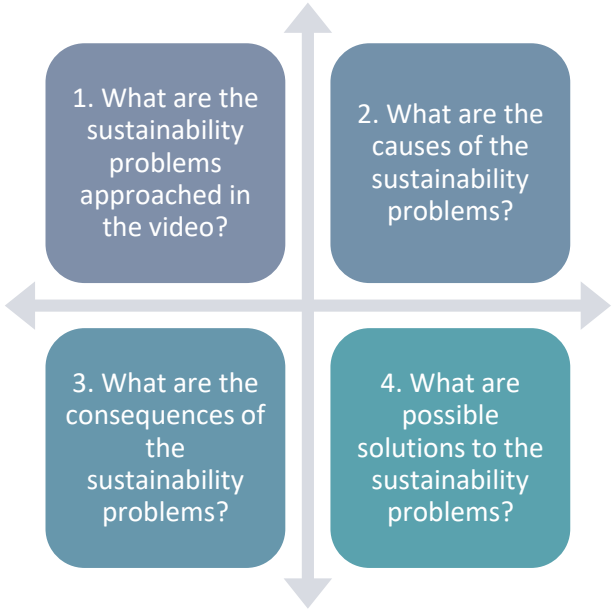
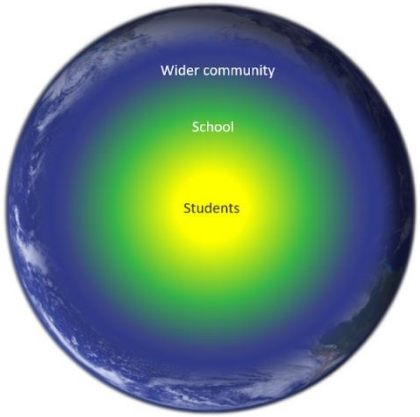


Figure 6. Questions to discuss the video content.

4. Following the discussion, allocate 5 minutes to each group for presenting their answers using digital support, such as an online forum, or verbally with other groups (in the case of an in-person session).

Follow-Up

The aim of the follow-up activities is to reflect about the teacher practices.		**Estimated Duration 30 min**
Activity 5. Reflection on teacher practice This is an activity aimed at helping reflection (individually and/or with colleagues) on how the previous activities contribute to developing sustainability competences and acting in a more sustainable way.	**How can I mobilize the activities in my teacher practice?** Please reflect on two or three of the following dimensions at three levels of engagement (students - teacher; school; and wider community and beyond):  **Dimension 1. Learning objectives:** In what ways do these activities contribute to the global educational goals for your students? You might consider in particular LTP methods, materials, tools and activities you would or have implemented/transferred from the TAP-TS LTP into your regular teaching curricula.	30 min

	Within the school or learning context, how have the activities helped the learners in terms of embodying sustainability values, acting for a sustainable future and/or envisioning a more sustainable future? How have the activities added to the knowledge and understanding of the learners in terms of working with others in the broader community to create inclusive visions for a more sustainable future? **Dimension 2. Integration with different subjects:** In what ways the activities could engage your students with different knowledge areas and subjects of the curriculum? In what ways these activities could be connected with different subjects of the curriculum? How have the activities contributed to collaboration with others at school or institutional level to approach a sustainability issue from different perspectives, knowledge areas and contexts? In your opinion, do the LTP materials, tools and methods you have implemented also offer potential for use in other subjects? If so, in which subjects? How have the activities encouraged students to draw on different perspectives, and subject knowledge to identify interconnections, and reflect on one's own environmental, cultural and economic impact? **Dimension 3. Inclusion:** Can the previous activities contribute to all students' participation and learning? What actions can you take to ensure the learning of all students? How have the activities contributed to engage with different perspectives to consider sustainability challenges and opportunities?	

	How do the activities help reflect on, identify, envision or even shape the trajectory towards a collective preferred future that includes various perspectives, cultures, traditions, and are grounded in values for sustainability? **Dimension 4. Environmental / Sustainability awareness:** To what extent do the activities promote awareness and responsibility among your students? Did the implemented LTP materials, methods or tools increased or rather limited the opportunity to increase students´ environmental awareness? How have the activities encouraged the students to be aware of their individual and collective impact on nature, and provided opportunities to restore it at school level? How have the activities contributed to grasp connections and interactions between natural events and human actions? **Digital resources and equipment:** Do the current resources and equipment available in your institution adequately support the activities you have selected and implemented from LTP materials, or are there enhancements needed? How did you try to enable students to use resources for learning at school in a sustainable way? Did the activities encourage students to assess and question their needs to carefully manage resources in the pursuit of longer-term goals and common interests? How did the activities help them to think critically about information sources and communication channels on sustainability to assess the quality of the information they provide?	

Community involvement:

- To what extent can you involve the local community or connect with community issues related to the sustainability theme approached?
- Have the selected and implemented LTP methods, tools and materials encouraged you to initiate cooperation with external partners (associations, companies, NGOs, etc.) to enrich learning experiences? If so, in which areas are you aiming for cooperation?
- To what extent do the activities engage in democratic decision making and civic activities for sustainable development?
- How does your teacher practice encourage students' intentions and willingness to give back to the community and nature?

Assessment and feedback :

- Have you adapted the original assessment methods or the requirements for students after integrating the LTP materials, methods, or tools into your existing teaching concept? If yes, in which way/how?
- To what extent does your teaching practice encourage students to use evidence, combine knowledge and resources to analyse and evaluate futures and their opportunities, limitations and risks, and contribute to decision-making at school level.
- To what extent does your teaching practice encourage students to use evidence, combine knowledge and resources to analyse and evaluate futures and their opportunities, limitations and risks, and contribute to decision-making, and become agents of change

Glossary of Icons

 - Video

 - Quiz

 - Worksheets

 - Editable Worksheets

 - Various Media, e.g. Learning Apps

 - Text to Read

 - A question to Respond or a Question for Reflection

 - A Discussion

 - A task for an inquiry or search

 - Focusing Activity

 - A Reflection Activity

 - An Activity for Action

 - Suggested answers

 - a short note for a teacher

 - a group exchange

Glossary of Notions

Sustainable Development Goals: Goals adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity other (United Nations Development Programme).

Worksheets and links

Start-Up

Activity 1. Connections of Sustainable Development Goals with environmental education

- **Video** A look at the sustainable development goals

Development

Activity 2. The core concepts of sustainability education

- **Video** What is sustainable development?
- **Worksheet** **Environmental education, sustainability education and education for sustainable**

Activity 3. Example of STEAM approach for Sustainability & Environmental Education

- **Video** Watch ALBATROSS
- **Video** BAD PLASTICS project | Plastic pollution
- **Poster** TOP 10 single-use plastics items found on sea shores
- **Link** EU restrictions on certain single-use plastics
- **Worksheet** **Single-use plastics items**.

Consolidation

Activity 4. Creation of a digital resource about ecosystem protection

- **Video** What is biodiversity?
- **Video** Are we running out of clean water?
- **Video** Climate crisis solutions – Energy

Additional Links

- Understanding Global Change Infographic (berkeley.edu)

References

Bianchi, G., Pisiotis, U., Cabrera Giraldez, M. (2022). *GreenComp – The European sustainability competence framework. Bacigalupo, M., Punie, Y (Eds.). EUR 30955 EN*. Publications Office of the European Union. https://doi.org/10.2760/13286, JRC128040.

Steffen, W., Richardson, K., Rockström, J., Cornell, S.E., Fetzer, I., Bennett, E.M., Biggs, R., Carpenter, S.R, de Vries, W., de Wit, C.A., Folke, C., Gerten, D., Heinke, J., Mace, G.M., Persson, L.M., Ramanathan, V., Reyers, B., & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science, 347*(6223). https://doi.org/10.1126/science.1259855

United Nations (2015). *Transforming our world: The 2030 Agenda for Sustainable Development. A/RES/70/1.* United Nations. https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981#

United Nations (n.d.). *Sustainable Development Goals https://www.un.org/sustainabledevelopment/*

Co-funded by the European Union

Teacher Academy Project
TEACHING SUSTAINABILITY

TAP-TS Roadmap

TAP-TS Roadmap has three main goals: (1) for the TAP-TS partners as a roadmap to design LTPs; (2) for teachers and student teachers to design materials for teaching sustainability; (3) evaluation of LTPs. Explore the visualisation on the next page.

TAP-TS Roadmap: the Steps / stages in the TAP-TS LTPs Design Journey	
1: Clarify the Goal	Our overarching goal is to enable learners and teachers to think and act sustainably. To actively participate in the discourse on sustainability, the topics must also be addressed - sustainably - in schools and universities. The goal of TAP-TS is to create learning and teaching packages for this purpose in the following areas: 2.1 A Sustainable Europe. 2.2 Sustainability and Digitality. 2.3. Sustainability and Environmental Education. 2.4 Climate Crisis Resilience. 2.5 Dealing with Climate Disinformation. 2.6 Green Citizenship in/for Europe. 2.7 Sustainable Entrepreneurship Education.
2: Competency Areas	The LTPS should be aligned with the interconnected four competences defined in the Green Comp Framework: • Embodying sustainability values • Embracing complexity in sustainability • Envisioning sustainable futures • Acting for sustainability
3: Networking & Bundle Expertise	There are many exciting topics. 1. Find a focus: what driving question is at the centre of your LTP. 2. See what resources are available (competencies, teaching-learning materials, etc.). 3. Network with colleagues and partner institutions regionally and nationally.
4: Working through the design process	Teaching Sustainability should be: action-oriented learning; hands-on; focussing on real life challenges; stimulate creative collaboration between teachers and learners; visions-oriented; participatory and action oriented . Approaches to teaching sustainability may be inquiry-based learning; explorative learning; networked learning; participation learning aimed at problem framing. Teaching Sustainability may incorporate the following activities: collaborative projects, future framing workshops, research and analysis, discussion.
5: ASSESSMENT DESIGN And REFLECTION	In Education for Sustainability assessment can be multifaceted and primarily encourage reflection and be evidence based. There is not always ONE right answer. The goal should be to RAISE QUESTIONS. TS is not about teaching the „right“ behaviour, but about practising a critical perspective. Give TS an important place in curricula and implement credits, badges, or awards for it.
6: PUBLISH TO TAP-TS PLATFORM	Can you and where can you publish your materials under a Creative Commons license as free as possible. Because that is sustainable!

Co-funded by the European Union

Teacher Academy Project
TEACHING SUSTAINABILITY

ROADMAP Developing TAP-TS Materials

1 CLARIFY THE GOAL

A goal of TAP-TS is to create learning and teaching packages that would enable teachers and learners think and act sustainably. Find a focus based on SDGs, GreenComp Framework or a sustainability problem; and define learning objectives within the seven TAP-TS themes.

1. A Sustainable Europe.
2. Sustainability and Digitality.
3. Sustainability and Environmental Education
4. Climate Crisis Resilience. 5. Dealing with Climate Disinformation. 6. Green Citizenship in/for Europe. 7. Sustainable Entrepreneurship Education.

2 PLAN

Consult the TAP-TS LTPs Architecture.
The LTPs Units should address the interconnected competences as defined e.g. in the Green Comp Framework:

1. Embodying sustainability values
1.1 Valuing sustainability | 1.2 Supporting fairness | 1.3 Promoting nature
2. Embracing complexity in sustainability
2.1 Systems thinking | 2.2 Critical thinking | 2.3 Problem framing
3. Envisioning sustainable futures
3.1 Futures literacy | 3.2 Adaptability | 3.3 Exploratory thinking
4. Acting for sustainability
4.1 Political agency | 4.2 Collective action | 4.3 Individual initiative

See GreenComp for details

3 BUILD NETWORK AND GROW EXPERTISE

See what resources are available and could support your LTP (teaching-learning materials, etc.).
Network with colleagues and partner institutions regionally and nationally.
Describe possible collaborations with the 'world of work'.

4

5

DO IT! HAVE FUN! DISCUSS! BE CREATIVE!

6 REFLECT

In Education for sustainability assessment is multifaceted, and primarily encourages reflection ifor action and future- oriented aimed to raise questions and practise a critical perspective.

There is no ONE right answer! Give TS an important place in curricula and implement credits, badges or awards for it.

7 SHARE

Publish and share your materials under a Creative Commons license as open access. Because that is sustainable!

Link to GreenComp:
https://publications.jrc.ec.europa.eu/repository/handle/JRC128040

Teaching Sustainability: Learning activity Template

1. Introduce yourself!

My name:
My country:
My role:
My school:
My class:

2. OVERVIEW

Provide a brief description of the learning activity, including information about the targeted age group and duration. Clearly state the motivation behind your learning activity and explain which elements of the curriculum your learning activity is related to.

Age Group:

Duration:

Related Themes of Sustainability:

Description:

3. LEARNING OUTCOMES

What are the learning outcomes of this learning activity, and which key GreenComp competences does it promote?

4. LEARNING APPROACH

Having in mind the learning outcomes, what active learning approaches will be applied?

Specify the engagement strategies and sequence of learning tasks that students will develop in the context of the activity. Explain how GreenComp competences will be promoted.

What will be the role of the teacher, and what will be the students' role? How will the students work—individually or in groups?

5. DIGITAL RESOURCES

Which digital technologies, including tools, services, and resources, will be utilized in the activity? Additionally, how will these digital technologies be effectively integrated to enhance lesson outcomes and student understanding?

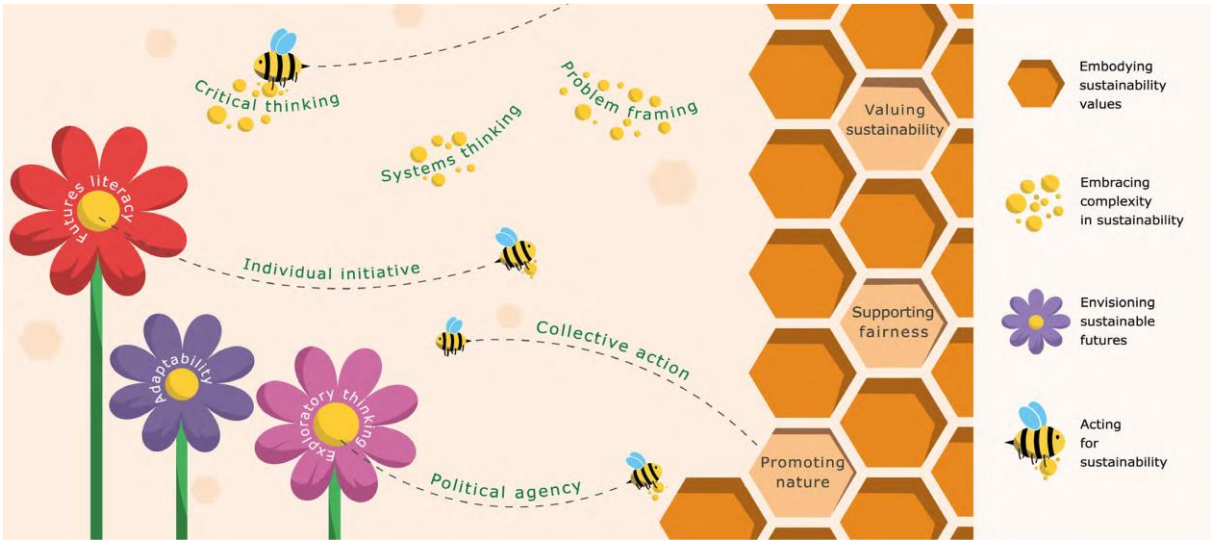
6. ASSESSMENT

What assessment strategies and instruments will be employed to evaluate student learning?

GreenComp Framework: the European Sustainability Competence Framework

Within the TAP-TS Project, *GreenComp (Bianchi et al., 2022)* serves the following purposes: design of learning and teaching packages; development of TAP-TS professional development activities, (self)-reflection, and evaluation. The aim of GreenComp is to foster a sustainability mindset by helping teachers and students develop the knowledge, skills and attitudes to think, plan and act with empathy, responsibility, and care for our planet.

Visual representation of *GreenComp:*



GreenComp consists of 12 competences (in bold) organised into the four areas (in italics) below:

- *Embodying sustainability values, including the competences*
- **valuing sustainability**
- **supporting fairness**
- **promoting nature**

- *Embracing complexity in sustainability, including the competences*
- **systems thinking**
- **critical thinking**
- **problem framing**

- *Envisioning sustainable futures, including the competences*
- **futures literacy**
- **adaptability**
- **exploratory thinking**

- *Acting for sustainability, including the competences*
- **political agency**
- **collective action**
- **individual initiative**

Reference: Bianchi, G., Pisiotis, U., Cabrera Giraldez, M. GreenComp – The European sustainability competence framework. Bacigalupo, M., Punie, Y. (editors), EUR 30955 EN, Publications Office of the European Union, Luxembourg, 2022; ISBN 978-92-76-46485-3, doi:10.2760/13286, JRC128040.

Project partners

TECHNISCHE UNIVERSITÄT DRESDEN

UCD DUBLIN

PH Wien

TECHNISCHE UNIVERSITÄT DARMSTADT

CorEdu
Bildung durch und durch

eummena

KR EDUCATION

SANTARÉM POLYTECHNIC UNIVERSITY
POLITÉCNICO DE SANTARÉM

CYPRUS PEDAGOGICAL INSTITUTE

Friedrich-Schiller-Gymnasium Pirna
Gymnázium Friedricha Schillera v Pirně

THE KING'S HOSPITAL SCHOOL