



A sustainable Europe Learning and Teaching Package 1

UNIT 1: SUSTAINABILITY AND ME

**RACHEL BOWDEN AND KATRIN LANG, CENTRE FOR TEACHER EDUCATION AND
EDUCATION RESEARCH, TU DRESDEN UNIVERSITY OF TECHNOLOGY**



Co-funded by
the European Union



**TECHNISCHE
UNIVERSITÄT
DRESDEN**





Contents

Overview	2
Pedagogical Approach.....	2
Sustainability and Me: Background information	3
Piloting of the materials within TAP-TS.....	3
UNIT Overview	4
UNIT DESCRIPTION	6
Start-Up: Valuing sustainability ourselves and at school	6
Development: Using systems thinking to explore sustainability issues.....	13
Consolidation: Envisioning sustainable futures	21
Follow-Up: Acting for sustainability	25
Glossary of Notions	28
Glossary of Icons	29
Worksheets and Links	30
TAP-TS Roadmap	32
GreenComp Framework: the European Sustainability Competence Framework	34
Project Partners.....	34



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 from pexels.de
The icons were created by Taimoor D on Flaticon.

LICENSING:



This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License: Reusers may distribute, remix, adapt, and build upon the material in any medium or format for noncommercial purposes only, and only so long as attribution is given to the TAP-TS Project as the creator.

<http://creativecommons.org/licenses/by-nc-sa/4.0/>

Overview

Learning and Teaching Package 1 ‘A sustainable Europe’, provides introductory activities for addressing sustainability within secondary education and teacher education. The LTP is guided by three main questions:

- What does sustainability and sustainability education mean to me, in Europe and around the world?
- Why is sustainability important and how can a sustainable Europe be created?
- How can educators support young people to engage with sustainability issues and act for sustainability?
- How educators practice equitable and just education for sustainable futures?

Unit 1 (present), Sustainability and me, engages learners to consider what sustainability and sustainability education mean to them in European and international discourses. It is intended for use with secondary-level students, but some activities may be adapted for use with primary level and/or for student teachers. The unit is divided into four main sections: sustainability values, sustainability thinking, envisioning sustainable futures and acting for sustainability. These sections reflect the four dimensions of [GreenComp](#), the European Commission’s framework for sustainability competences (Bianchi et al, 2021). Each section includes start-up, development, consolidation and follow-up activities linked to learning objectives.

Unit 2 Envisioning a Sustainable Europe invites participants to imagine the European Union (EU) as a sustainable society while diving deep into the current risks towards a sustainable EU and opportunities that are being taken to contribute to one. It poses several key question of ‘why?’ questions: Why is it important to be sustainable? Why should we know the risks? Why and how can certain opportunities for a sustainable Europe be created? This unit aims at exploring the role of teachers and students in how they can act for change in collaboration with other, also identifying their own potential for a sustainable Europe.

Unit 3, Education for Sustainable Futures, engages educators to critically consider the potential of education to support the transition to more just and sustainable futures. The unit is divided into four sections.

Unit 4 ‘Multilingual Education and Sustainability’ explores multilingual education and the connections with sustainability in theory and practice. It is intended for use in teacher education (with student teachers and serving teachers). Premised on the recognition that language is intertwined with almost every aspect of education (including our construction of social contexts and activities, and pedagogical processes, goals and activities) this unit is of relevance for educators of all curriculum subjects.

These activities are intended as suggestions and starting points, and we invite and encourage teachers to select, adapt and supplement these with their own activities.

Pedagogical Approach

This LTP takes an active-reflective approach to learning. Activities in this unit are designed to bridge learners’ understandings and priorities with international discourse around sustainability issues and potential solutions. Individual and collaborative activities guide learners to articulate, question and develop their understanding with a focus on real-world challenges. Analytical and critical thinking are fostered



through visual mapping techniques, such as mind maps, rich pictures, and theory of change. Participants' diverse experiences, understandings and priorities are recognized as a resource for collaborative learning. Transformative learning is fostered through critical analysis of underlying causes of unsustainability, and the connection with fundamental beliefs and values, and embedded behaviors. There is an emphasis on identifying practical action to promote sustainability.

Sustainability is a complex, emotive and controversial topic. As educators, it is important to present a range of sustainability perspectives, protect learners' wellbeing and respect participant's right to form a personal opinion and position, as articulated in the 'Beutelsbach Consensus'.

These units are particularly well-suited to inter-disciplinary projects, and we suggest collaboration between teachers of different subjects to apply and adapt activities at school. The roles of teachers and learners may be quite different from regular subject teaching, and it is worth spending time at the start of the unit establishing 'ground rules' for working to promote a safe, inclusive and student-centered atmosphere. It is also important to develop ground rules for constructive dialogue. For ideas about what this includes, see the following video: [What is Educational Dialogue?](#)

We invite also to consult [the TAP-TS Roadmap](#) for developing teaching and learning materials.

Sustainability and Me: Background information

This unit aims to engage learners personally with the concept of sustainability and the sustainable development goals in order to foster transformative learning, and individual and collective action towards sustainable futures. We believe that critical, personal engagement with sustainability issues is essential to support the transition to sustainable futures and enable children and young people to constructively engage with the challenges of our times. This may seem too frightening and complex a theme for school, but we hope that a critical understanding of sustainability issues and an understanding of practical action students can take to foster sustainability will help to mitigate anxiety and feelings of helplessness. At the same time, we recognise the need for collective action, and the responsibility of governments, businesses and institutions to drive the transition to just and sustainable futures.

The unit is shaped around the four dimensions of the European commission's sustainability competence framework 'GreenComp' (Bianchi et al., 2021). Thus it also illustrates for teachers activities linked to each of the four dimensions, and competences within them.

Piloting of the materials within TAP-TS

Materials from this unit have been piloted with students at a local secondary school, with student teachers at TU Dresden, and with participants at the TAP-TS Active Learning Event, and Summer School.



UNIT Overview

Main Topic	Target Group	Duration	Knowledge Area/ Subjects in School	Activities	Possible assessment
This unit aims to engage learners personally with the concept of sustainability and the sustainable development goals in order to foster transformative learning, and individual and collective action towards sustainable futures.	Secondary-level students (11 years-16 years); student teachers	A project week A series of four, 90 minute – 180 minute workshops	Civic education, political education, ethics, and/or interdisciplinary projects	<p>Start-UP Activity 1. 'Me map' Activity 2. 'Perspectives on sustainability' Activity 3. 'Sustainability values'</p> <p>Development Activity 4. 'Web of life' Activity 5. 'Investigating the SDGs as systemic issues' Activity 6. 'Apply systems thinking to your issue' Activity 7. What concerns you?</p> <p>Consolidation Activity 8. 'Advice for the future' Activity 9. 'Ideal futures'</p> <p>Follow-UP Activity 10. 'Impact/feasibility matrix' Activity 11. 'River diagram' Activity 12. 'SMART action plan'</p>	Self-and peer assessment based on the learning objectives for each activity; Self- and peer-assessment based on 'ground rules' for constructive and collaborative learning.
Intended Learning Outcomes	<p>Having worked through the activities and materials, students will be able to:</p> <ul style="list-style-type: none"> ✓ Articulate personal values and consider how values differ between individuals and communities and vary over time ✓ Define the term 'sustainability', personally and in relation to international discourse ✓ Discuss the UN Sustainable Development Goals, in general and with some specific examples of goals and targets ✓ Describe sustainability values, and what these might look like in practice, and possible tensions between them 				



	<ul style="list-style-type: none"> ✓ Apply systems thinking to explore a sustainability issue ✓ Envision sustainable futures by imagining and developing alternative scenarios ✓ Identify the steps needed to achieve a preferred sustainable future. ✓ Plan, do, record and review actions for sustainability 									
Prior Competencies	optional/ideal: Unit 1. 'A sustainable Europe'									
Required materials	Flipchart paper/poster paper Marker pens in different colors Tape for sticking posters to walls Space for students to move around and work in groups Laptops and internet for research into topics (optional)									
Cooperation/ Networking	Whole school approach									
Addressing GreenComp	Embodying sustainability values									
	<table border="1"> <tr> <td>X</td> <td>1.1 Valuing sustainability</td> <td>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.</td> </tr> <tr> <td>X</td> <td>1.2 Supporting fairness</td> <td>To support equity and justice for current and future generations and learn from previous generations for sustainability.</td> </tr> <tr> <td></td> <td>1.3 Promoting nature</td> <td>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.</td> </tr> </table>	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.	X	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.
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.								
X	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									
	<table border="1"> <tr> <td>X</td> <td>2.1 Systems thinking</td> <td>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.</td> </tr> <tr> <td>X</td> <td>2.2 Critical thinking</td> <td>To assess information and arguments*, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions.</td> </tr> <tr> <td>X</td> <td>2.3 Problem framing</td> <td>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.</td> </tr> </table>	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.
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									
	<table border="1"> <tr> <td>X</td> <td>3.1 Futures literacy</td> <td>To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future</td> </tr> <tr> <td>X</td> <td>3.2 Adaptability</td> <td>To manage transitions and challenges in complex sustainability situations and make decisions related to the future in the face of uncertainty, ambiguity and risk.</td> </tr> <tr> <td>X</td> <td>3.3 Exploratory thinking</td> <td>To adopt a relational way of thinking by exploring and linking different disciplines, using creativity and experimentation with novel ideas or methods.</td> </tr> </table>	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	X	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.	X	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.
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								
X	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.								
X	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									
	<table border="1"> <tr> <td></td> <td>4.1 Political agency</td> <td>To navigate the political system, identify political responsibility and accountability for unsustainable behaviour, and demand effective policies for sustainability.</td> </tr> <tr> <td>x</td> <td>4.2 Collective action</td> <td>To act for change in collaboration with others.</td> </tr> <tr> <td>x</td> <td>4.3 Individual initiative</td> <td>To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet.</td> </tr> </table>		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.
	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: Valuing sustainability ourselves and at school

The Start-Up activities are formed around GreenComp Competence 4.1.1 Valuing sustainability

Descriptor (1.1): *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*

Valuing sustainability aims to foster reflection on values and perspectives in relation to concerns for sustainability. In this context, learners can articulate their values and consider their alignment with sustainability as the common goal. *Valuing sustainability* could be defined as a meta-competence, since its primary aim is not to teach specific values, but make learners realise that values are constructs and people can choose which values to prioritise in their lives³¹. *Valuing sustainability* enables learners to reflect on their way of thinking, their plans, and their actions. It asks them whether these cause any harm and are in line with sustainability values and thus contribute to sustainability. It offers learners an opportunity to discuss and reflect on values, their variety and culture-dependence. (...) (Bianchi et al., 2021 p.17-18)

**Estimated
Duration
180 Min**

Activity 1. Me map

This activity guides learners to reflect on themselves and what is important to them, before considering what their personal values are, and how values differ between people and over time.

Preparation for Activities: Materials, room to move around. Atmosphere of trust.

A Note for a Teacher

These activities are designed to build trust, foster a sense of community, and recognize the diversity of the group as a resource for learning. Learners choose what to share.




Key messages around values and values thinking to draw out in discussion and feedback





Values are beliefs about what is important, which shape our behavior and how we interpret the world and the behavior of others. Our values are shaped through our life experience: through interactions with family, friends, at school and other communities we are part of, and through our engagement with

45-60 min



<p>In the next activity, learners explore the notion of sustainability, define sustainability values and reflect on how their own values align with these.</p> <p>This activity links to GreenComp 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.</p>	<p>advertising, the media, art and education. Our values may change over time and we may have values which contradict each other. We are not always able to act in line with all of our values. Also, while values reflect our ideals, reality is messy! We are physical, emotional, cognitive and spiritual beings interacting with others in our environments, and there are many things we cannot control. Purposefully articulating sustainability values helps us to recognize behaviors which support sustainability, and where possible, to act more in line with our ideals.</p>	
	<p>Description</p> <p> Individual task</p> <ul style="list-style-type: none"> • Ask students to create an image to represent themselves, as they are now. This can be a literal picture of their face or whole body, a symbol, or a collage made from magazine and newspaper cuttings – or a combination of these ideas. Learners can include languages, places, people, communities, events and experiences which shape them. • Next, ask learners to think of 5 things that are very important to them/ their wellbeing. These can be real, concrete things like a bicycle, a family member or an activity, or abstract things, like family, creativity, friendship, or sport. • Ask them to choose a word or image to represent each of the important things, and write/draw these on separate pieces of paper. Then, ask learners to add the papers to their image of themselves, placing the most important things closest to the centre of the image. <p> Small group activity</p> <ul style="list-style-type: none"> • Ask learners to take turns to present their 'me maps' and to ask and answer questions to talk about the things which are important to you. • Next, they should look at the List of Values Handout  (© 2020 by Brené Brown, LLC) and select 3-5 values which reflect what is important to them. 	



	<div data-bbox="645 288 1765 603" style="border: 1px solid black; padding: 10px; margin-bottom: 20px;">  <p>You might lead in to the discussion with a ‘gallery walk’, where the class have a chance to look at everyone’s image. You can then present each subset of questions for ‘think, pair and share’ (i.e., individual reflection, pairs discuss and then present to the whole class). This gives all participants chance to develop their ideas before sharing with the whole group. Alternatively, you could arrange the questions, sub-grouped as they are here, on different posters around the room, or</p> </div> <div data-bbox="533 655 584 707">  </div> <p>Discussion questions</p> <ul style="list-style-type: none"> • How do you enact your values in your daily life? (e.g., I look after my pet, I try hard at school, I am kind to my family and friends) • What behaviours contradict your values? (e.g., Sometimes I am unkind to people, I buy things I don’t really need) • What values do we have in common? What are some differences? Why is this? • How do you think your values will change in the next 20 years? Why/why not? • We don’t always act in line with our values. Why not? 	
<p>Activity 2. Perspectives on sustainability</p> <p>In this activity learners consider and share their</p>	<p>Preparation for Activities:</p> <p>A Note for a Teacher:</p> <p>This activity is intended to guide learners to develop their personal understanding of sustainability, in relation to various representations of the term, including the sustainable development goals. If you are short of time, you may want to just focus on the sustainable development goals.</p>	<p>45-60 min</p>



own understandings of the term ‘sustainability’, before learning about how the term is used in international discourses, including in relation to the Sustainable Development Goals.

GreenComp 1.1 Valuing sustainability

During feedback may be helpful to emphasize the following core aspects of sustainability (crises and possible solutions):

- Human-caused problems and possible solutions
- Threaten the survival and well-being of human and non-human beings and ecosystems
- Connections between ecological, social (cultural and political), economic aspects of life
- Connections between socio-ecological systems (local to global)



The sustainable development goals aim to foster international understanding and action around sustainability crises and possible solutions. The assumption that it is possible or desirable to have one single narrow definition of sustainability, given the complexity of our world is criticized. Sustainability means different things to different people and groups in relation to their emerging worldviews, beliefs and interests. Dialogue between different positions is important to enable understanding and action within and between different communities.

Description



Individual task

- Ask learners to draw an image to represent how they understand the term ‘sustainability’. This can include real-world objects and processes, ideas, symbols, words.



Group discussion

Learners take it in turns to present and discuss their images in a small group

1. What are the similarities between your ideas?
2. What are the differences?
3. Is it possible (or desirable) to have a single definition of sustainability? Why? Why not?



Research

Learners work with a partner or small group to explore one of the following different ways of representing sustainability.

Guiding questions:

*Where does this idea come from? Who developed this idea? When was it developed? How is it used?
What aspects of sustainability are emphasised? What aspects are missing?*



[The Sustainable development Goals](#)



[Sir Ken Robinson worlds largest lesson animation film](#)



[Planetary Boundaries Model of sustainability](#)



[Brundtland Report](#)



[Sustainability as justice](#)



[3 Dimensional model of sustainability](#)



[Ubuntu](#)



[Sumak Kawsay](#)



[Other?](#)





Group discussion

Learners take it in turns to present and discuss their findings in a small group

- What are the similarities between these ideas?
- What are the differences?
- Which ideas do you find most meaningful, and why?
- Is it possible (or desirable) to have a single definition of sustainability? Why? Why not?
- What are the benefits and drawbacks of an international framework for sustainability, like the SDGs?



<p>Activity 3. Sustainability values</p> <p>In this activity learners define values for sustainability, before reviewing how behaviors how at school reflect or contradict these values.</p> <p><i>GreenComp 1.1 Valuing sustainability; 3.3 Exploratory thinking</i></p>	<p>A Note for a Teacher:</p> <p>Sustainability crises are caused by human behavior. Individual and collective human behaviors are shaped by values. Becoming aware of values which support and undermine sustainability can help us to review and adapt our behaviours for sustainability.</p> <p>It is not always possible to act in line with our values. Nevertheless, the ability to be aware of our values, and to try and match our behaviour with our values is a superpower that is unique to humans. Being aware of our values enables us to e’value’ ate our own behaviour, and that of the communities we are part of.</p> <p>Description</p> <p> Pyramid activity</p> <ul style="list-style-type: none"> • Ask learners to think back to their understanding of the ‘sustainability’. They should then decide on three values which can guide people to behave more sustainably. • Ask learners to find a partner, and compare lists. Learners should explain their thinking to each other, and listen actively. Aim to create a list of four values. • Next, learners work in a small group, and compare lists. Learners should explain their thinking to each other, and listen actively. Aim to create a list of five values. • Then, learners make a larger group, and compare lists. Learners should explain their thinking to each other, and listen actively. Aim to create a list of five values. • Finally, as a whole group, learners compare lists. Learners should explain their thinking to each other, and listen actively. Aim to create a list of six values. <p> Group task – ‘Evaluate our school’</p> <p>In this task, learners use the values they identified to evaluate their class or school.</p>	<p>60min</p>
---	---	--------------



Guiding questions

- How does our school reflect sustainability values?
- Which of our strengths should we develop further? How can we do this?
- Which of our weaknesses can we change? How?



Groups can choose one or more of the following areas of school life to consider:

- Buildings, rooms, outdoor spaces
- Resources, materials and equipment
- People: Roles and relationships, how people interact.
Behaviours which are rewarded and encouraged
- Connections: Between the school and local and international communities
- Learning and teaching: What and how we learn



Share your findings and identify action to **support sustainability at your school/learning institution!**

Development: Using systems thinking to explore sustainability issues

The Development activities are formed around the GreenComp Competence 4.2.1 Systems thinking

Descriptor (2.1): *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*

“Equipping learners with systems thinking is necessary to understand complex sustainability problems and their evolution. Systems thinking allows us to understand reality in relation to other contexts (local, nation, global) and fields (environment, social, economic, cultural). It is critical for advancing sustainability” (Bianchi et al, 2021 p.29).

Estimated
Duration

90-180
min

Activity 4. Web of life


This physical and interactive activity highlights the importance of systems thinking in relation to natural ecosystems.

GreenComp 1.1 Valuing sustainability: 2.1 Systems thinking

Preparation for Activities:

You will need a ball of wool and the ‘web of life cards’ .

Description

-  Prepare the ‘web of life cards’, so that there are as many cards as participants. You can adapt this list, as long as you retain the four main elements of nature: sun, soil, air and water.
- Arrange participants in a circle, and give each participant a card each to hold. They should hold their cards so that others can see.
- Take the ball of string and give it to the learner who has the Sun card. It is appropriate to begin with the Sun because all life is made possible by it. Let the learner symbolizing the Sun loop one end of the string around her or his finger and pass the ball of string to any aspect of nature that the learner feels is related or connected to. For example, the ‘Sun’ may pass it on to ‘Tree’ because the ‘Sun’ gives energy to plants or trees. **The learners should state the reason why she feels related to this element.**
- The ‘Tree’ then winds the string once or twice around her or his finger after ensuring that it is not loose between the ‘Sun’ and her or him. The learner symbolizing the ‘Tree’ then passes it to another aspect


20-30 min








he or she feels related to, e.g., 'Fruit'. So, the line of relationships continues as the ball of string unwinds and begins to form a pattern which the learners/learners hold together.





- Ask the learners to see the web-like effect of the string.
- Then ask them to raise the web chest high. Let them hold it tightly so that if the web is pressed down it does not sag and touch the ground. Ask the learners to observe, feel and note this.
- Ask the learners what would happen if some of these elements were destroyed. Let the learner representing these elements drop the string. Notice the visual effect. More elements may be dropped to dramatize the effect.
- Now press the web down. It would probably touch the ground because it is loose. Ask the learners what would happen if the Sun or the other three major elements of nature were disturbed.
- Conclude the game by asking learners to discuss and describe why inter-relationships and interconnectedness exist and why they are important in the context of sustainability.

Source: This activity is taken from the handbook 'Ten steps Towards Systems Thinking' produced by ESD Expert NET. (p.190). For more excellent systems thinking resources, [visit their website](#).

<p>Activity 5. Investigating the SDGs as systemic issues</p> <p>In this activity, learners become familiar with the SDGS and learn about one SDG in particular, through a variety of activities which foster systems thinking.</p>	<p>Preparation for Activities:</p> <p>Print and laminate a set of the 17 SDGs (https://www.un.org/sustainabledevelopment/news/communications-material/)</p> <p>Display these in the hall outside the classroom.</p> <p>A Note for a Teacher:</p> <p>The same website has information graphic posters for each SDG, providing important background information, and information about progress toward achieving the goal and targets.</p>	<p>45-60 min</p>
<p><i>GreenComp 1.1 Valuing sustainability:2.1 Systems thinking</i></p>	<p>Description</p> <p> 1. Give the following instructions:</p> <ul style="list-style-type: none"> • How many Sustainable Development Goals (SDGs) can you remember? • Make a list, then compare with a partner. • Check your answers (e.g., by taking it in turns to check the SDGS outside of the room, without using a pen or paper) • Which SDG interests you the most? Why? <p>2. Allocate each learner an SDG. Ask learners to note down what they know about this SDG. What assumptions would they like to check? What questions do they have?</p> <p>3. Ask learners to share their work so far with a partner. This might be someone looking at the same SDG, or a different one. They should help each other to identify the three most important questions they have in relation to the SDG.</p>	



	<p> 4. Research: Next, ask learners to do online research to try and answer their questions. A good place to start is the UN SDG website, where you can find up to date information about the goal and targets.</p> <p>5.  Analysis: Next, explain to learners that they are going to explore their SDG as a systemic issue.</p> <p>Here are two handouts which learners can use to guide exploration and analysis of their SDG:</p> <p>Scale and dimension analysis: Handout 3.1 </p> <p>Relation to other SDGs: Handout 3.2 </p> <p>6.  To complete this activity, repeat the web of life activity, this time with a focus on the SDGs. Take it in turns for each SDG (with one or more learners) to plot the connections between their SDG and the other SDGs. As they do so, they should explain the connection to the class.</p>	
<p>Activity 6: What concerns you?</p> <p>In this activity, learners identify a local issue which concerns them.</p> <p><i>GreenComp 1.1 Valuing sustainability: 2.1 Systems thinking; 2.2 critical thinking</i></p>	<p>Preparation for Activities:</p> <p>You might want to prepare some prompts to help generate ideas of local issues. For example, images from magazines or newspapers. Alternatively, you could bring (or ask learners to bring) magazines and newspapers to school, and ask them to select images. Another idea is to give learners time to identify an issue which concerns them to learn about and act for, for example by telling them a few weeks in advance.</p> <p>A Note for a Teacher:</p> <p>The rest of the activities in this unit guide learners to further explore and act for the issue they choose.</p>	

	<p>Description</p> <ol style="list-style-type: none">  Tell the class that the purpose of this activity is to choose an issue to work on during the other sessions you have planned. It should be something they care about, and are interested in.  If necessary, give learners time to select an issue (see preparation for activities above). Once learners have selected an issue, begin the ‘issue marketplace’ task. <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p> To do this, learners circulate around the room, talking to others about their issue. They should explain what their issue is and why it is important. They should also actively listen to others and be open to changing their own minds. They may find others have similar or the same issue. The aim is to form groups for the main activity of the lesson. If some groups are too large (groups of more than 5 people, risks not all being active members), then there can be more than one group with the same topic.</p> </div>	
<p>Activity 7. Think systemically</p> <p>In this activity learners use mind mapping /visual mapping techniques to explore their chosen issue</p>	<p>A Note for a Teacher:</p> <p>Systems thinking highlights the complexity of sustainability issues. This is an excellent way to develop learners’ critical thinking skills in relation to an issue they care about.</p> <p> To supplement their current knowledge, learners can conduct research to understand their issues and how they impact people locally and globally. For example, through questionnaires and focus groups at school, and internet research.</p>	<p>45-60 min</p>



GreenComp 1.1 Valuing sustainability:2.1 Systems thinking

Description

1.  *Why-why-why?*

- This is a thinking game to identify reasons why an issue happens (causes), and relationships between causes and at different scales (local to global).
- Starting with their issue, participants take it in turns to ask each other ‘why’, building a map of causes. For example: Issue: ‘there are too many cars in our city’, Why? Because people need cars to get to work and school. Why? Because public transport is unreliable. Why? Because the local government do not invest in public transport; Why? Because local government are underfunded; Why? Because wealthy people do not pay enough tax; Why? Because if this government taxes them, they will move to another country with lower tax; Why?
- Encourage participants to build a why net (like a fishing net), rather than a single linear chain, to show different causes (and causes of causes) and relationships between them.
- Ask learners to use a different colour to differentiate between local, national and global causes.
- This can lead to additional questions, such as, is this ok? What can we do to change things?

2.  *Issue tree*

Issue tree is a visual thinking tool which is used to map causes, impacts and possible actions in relation to a given issue. Here are the steps:


- Choose an issue and a scale to explore –local-global (see scale/dimension analysis above). This is the trunk of your tree.
- Brainstorm causes (and causes of causes) and draw these as the roots of your tree.
- Identify impacts (and impacts of impacts) and draw these as the branches of your tree
- Identify possible actions to address this issue (these are leaves on your tree)



- Identify 'lever points' (actions which may have a significant impact on the whole system) add these as fruit to your tree.




3.  *Mindmaps*

- Alternatively, learners may create mindmaps to explore different aspects of their issues and the relationships between them.
- Mindmaps can be drawn using paper and pens, or [mindmapping software](#).
- Start with the issue in the middle of the mindmap
- Then map in related issues and relationships between them. These can include:

-  Causes (and causes of causes) and impacts (and impacts of impacts) – use different colours for these
- The direction of the relationship (using arrows)
- Whether the relationship is positive i.e. an increase in the factor increases the issue (e.g., when more students feel unhappy, more students bully other students), or negative i.e., when it increases it acts to reduce the issue (e.g., the more waste bins there are in school, the less rubbish students throw on the ground)
- The strength of the relationship (using the thickness of the connecting line)

(Penn and Barbrook-Johnson (2022) Participatory system mapping)



4.  'Gallery walk' – participants display their issue tree or mindmap on the wall, on a table or online. One person from the pair/group should stay with the map, to explain it to visitors. They can swap this role so that everyone has a chance to look around. Visitors can ask questions to help the authors check their assumptions. As they learn more learners can add new information (and further questions) to their mindmap
5.  At a given point, learners can prepare a video or blog to present your topic, and complexities of their topic, to others.
6.  Highlight the need for ongoing learning, honesty about what we know and how, and humility about what we don't know – key research principles!

Source: Activities adapted from: Action Aid (2003) Get Global! A skills-based approach to active global citizenship. Available to download here:

<https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620727/gt-get-global-section-1-280907-en.pdf?sequence=1>



Consolidation: Envisioning sustainable futures

The activities are formed around GreenComp competence area 3. Envisioning Sustainable Futures

- *Envision sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future.*

“**Futures literacy** empowers learners to create their visions for a sustainable future by providing them with the knowledge, skills and attitudes to understand the futures as a variety of alternatives. Research commonly differentiates between three approaches in order to understand the futures:

- **expected future**, i.e. what we expect to happen based on what it is happening today and what we know, e.g. business as usual;
- **alternative future(s)**, i.e. what will happen may differ from expectations, e.g. creation of green jobs that currently do not exist;
- **preferred future**, i.e. we may envision a sustainable future for us, our community and our planet, and identify the steps and actions needed to achieve that future, e.g. a circular economy.

(...) Futures literacy encourages learners to i) use their imagination when thinking about the future, ii) tap into their intuitions and creativity, and iii) assess the possible steps needed to achieve their preferred future.” (Bianchi et al, 2021 p.23 (bold not in original text))


**Estimated
Duration**
90-180
min

Activity 8. Advice from the future

4.3.1 Futures literacy Descriptor (3.1): *To envision alternative sustainable futures by imagining and developing alternative scenarios and*

Preparation for Activities: Clear furniture to the sides of the room for these activities. The plenary section works well with students seated in a circle or horseshoe. For final feedback, elicit reflections from each group of three.

Description

1.  You could begin the session with a guided visualization, where you ask students to pretend they are asleep, and then wake up on planet earth in 100 years. Ask them to imagine what they see, hear, smell, and touch as they move around future earth.

45-60 min



identifying the steps needed to achieve a preferred sustainable future (Bianchi et al, 2021)



To work in pairs or small groups

“Imagine you are born 100 years into the future. You have the chance to share a message with your ancestors, which are people living in our present day. What message would you share? What would you ask them to do or not do? What would you tell them about planet earth as you experience it, and what has happened in the past 100 years. You can transmit your message as a poster and/or a 3 -minute podcast”.

2.  **Plenary**

Groups take it in turn to present their messages, including a description of their worlds, and advice for us, living in the present day.






As you listen, consider:

- Which of the future worlds do you prefer to inhabit and why?
- Which advice do you think is most important and why? Which advice do you think is easiest to act on?
- Why is futures thinking important for sustainability?

3.  **Threes**

Share your answers to the reflection questions. Prepare a short summary of your thinking to share with the whole class.



<p>Activity 9. Ideal futures</p> <p>This activity follows on from the systems thinking to engage in imagining preferred futures based on the SDGs</p> <p><i>GreenComp 1.1 Valuing sustainability; 2.1 Systems thinking; 3.1 Futures literacy</i></p>	<p>Preparation for Activities: It is important to have established ground rules for constructive dialogue. For ideas about what this includes, see the following video: What is Educational Dialogue? </p> <p>A Note for a Teacher: This activity can be used to build on ‘Valuing sustainability at school’ activity (above, under ‘start-up’) or ‘Using sustainability thinking to explore the SDGs’ (above, under ‘development’).</p> <p>Description</p> <ol style="list-style-type: none">  Select an issue to focus on. This can be related to one of the SDGs, or a situation at school where you want to see improvement. Look back at the work you did exploring the causes and impacts of your issue.  Create a ‘rich picture’ to illustrate an ideal future related to this issue. <div data-bbox="651 815 1621 1110" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p> Rich Pictures are drawings or pictures of situations, created by groups of people as a tool for guiding conversations around aspects of a situation/system and the connections between them. Pictures can contain images, symbols, words, and lines and boxes and more. Participants decide what to include in the picture. The emphasis is on the quality of the process, rather than the output.</p> </div>  Next, think of actions which could lead to this ideal future. Actions can be at Individual, Family/small group, Community, Nation-state, Transnational (across nation-state boundaries) and/or Global level. Aim to gather as many ideas as possible at first, without judging the ideas. Later, you can prioritise possible actions (see activities under ‘acting for sustainability’, under ‘follow-up’ below). 	<p>45-60 min</p>
---	---	------------------



There are two methods for identifying steps to lead towards the ideal future. Participants may choose between these, or experiment with both. Encourage learners to be as specific as possible: who, does what, by when and how

Forecasting – participants start with the current situation, and identify actions which would lead towards a sustainable future

Backcasting – Learners start with the ideal future, and work backwards, identifying actions which made it happen

4.  **Whole group - Gallery walk**

Groups display their two pictures and possible actions on tables or on the wall. At least one person from each group should stay by the images, as the class circulate and review each other's pictures. Explain that our aim here is to develop better ideas together through constructive dialogue. This requires mutual respect, open-mindedness and humility.



Encourage participants to:

- Ask questions to check their understanding
- Say 'yes, and' to extend the idea of the group
- Say 'have you considered' to highlight possible barriers and alternatives



Follow-Up: Acting for sustainability

The activities are formed around GreenComp Competence 4.4.3 Individual initiative

Descriptor (4.3): *To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet*

Individual initiative relies on someone knowing what types of action are possible, having confidence in their own potential to influence change (internal locus of control), and being willing to act. Recognising what types of action are possible and being aware of one’s own potential in terms of sustainability problems are the first steps someone needs to take in order to seize the initiative as an individual. However, individual initiative does not only rely on opportunities for action and someone’s self-awareness and self-efficacy. It also has a strong attitudinal aspect – the willingness to act.” (Bianchi et al, 2021 p.27)


Activity 10. Impact/feasibility matrix

Drawing on the previous activities, the aim here is to think of possible actions for sustainability critically in terms of possible impact.

GreenComp 2.1 Systems thinking; 4.1 political action; 4.2 collective action

A Note for a Teacher: Here students analyse and prioritise the actions suggested in the previous activity (Ideal Futures), using a matrix to consider both the feasibility and importance of different possible actions.



Description

 Select some or all of the action ideas from the previous activity. You might want to combine some actions which are similar. **Write each idea on a separate piece of card.**

Draw the following matrix on a large sheet of poster paper, or with chalk on a table, board or the floor.

	Low feasibility	High feasibility
Low impact	A	B
High impact	C	D

30 min





	<p>Take each action card in turn. First consider if the action may have a high or low impact. Next, think about how feasible (i.e., possible to achieve, with the resources you have available to you). Finally, place the action card in the matrix.</p> <p> This should help you identify feasible actions, which may have the biggest impact.</p>	
<p>Activity 11. River diagam</p> <p>In this activity, we employ the visual thinking tool of a river diagram to help plan an action, by considering supporting actions, possible barriers and resources.</p> <p>GreenComp 2.1 Systems thinking; 4.1 political action; 4.2 collective action</p>	<p>Preparation for Activities: For this activity students need space to work and art materials, such as large pieces of paper, and different colour marker pens or crayons.</p> <p>A Note for a Teacher: This activity aims to enable critical and collaborative thinking, and the focus is on the quality of the process over the end result. Allow at least 30 minutes to create the diagram, plus a further 30 minutes for groups to review and ask questions and comment on the other diagrams.</p> <p>Description</p> <p> The river represents what needs to be done to achieve the action, in chronological order. The source of the river shows the situation now, and the mouth of the river shows the action. Tributaries joining the river show what activities need to be done in the order they need to happen. Potential obstacles can be shown with boulders, waterfalls and whirlpools, for example. The river can be added to as the planning process progresses. (See Get Global, p. 45, for examples)</p>	60-90 min
<p>Activity 12. SMART plan</p> <p>This final activity aims to guide students to make</p>	<p>A Note for a Teacher: we recommend guiding students how to write SMART goals, and simple monitoring and evaluation measures to help them stay track and consider the impact of their actions.</p>	30-60 min



practical and achievable plans for action.

GreenComp 2.1 Systems thinking; 4.1 political action; 4.2 collective action

Description

1.  Write your chosen action as a SMART statement
2.  Listen to the SMART statements of others. Help each other to refine your statements so they are clear, and do-able.
3.  Once you have a SMART statement, discuss with your group:
 - How will we know we are on track?
 - How will we know when we have completed our action?
 - How can we know if/how successful we were?
4.  Follow up
 - Participants report back to the class/whole group on their progress/barriers/what they learned
 - Final presentations to review and reflect on projects overall.



Glossary of Notions

Educational dialogue

In dialogue, knowledge is built collectively over time through the respectful and critical exchange of different ideas and perspectives. Educational dialogue includes: listening carefully to others; sharing ideas, justifying contributions and making reasoning explicit; building on others ideas; critically and respectfully evaluating each other's ideas.

Participants

Participants are the pre- and in-service teachers, teacher educators who are readers of the current documents.

SMART goals

- S - Specific - - Your goal is clearly defined and states exactly what you are going to achieve.
- M - Measurable - - Your goal states success criteria, so you can track progress and know when your goal is met.
- A - Achievable - - Your goal challenges you, but is also something realistic.
- R - Relevant - - Your goal is connected to what is valuable and important to you.
- T - Timeline - - Your goal includes a date you will have achieved it by.

Values

Values are beliefs about what is important in life, and what is right and wrong. Values shape our behavior and how we interpret the world and the behavior of others.

Sustainability

The World Commission on Environment and Development's 1987 Brundtland report 'Our Common Future' defined sustainable development as that which meets **'the needs of the present without compromising the ability of future generations to meet their own needs'**. The notion of justice is central to sustainability, as it is about ensuring the rights of people around the world, recognizing historical injustices and their ongoing impacts, and the rights of future generations. There is increasing emphasis on recognizing [the rights of non-human beings and ecosystems](#)

Sustainability crises

Sustainability crises are those which threaten the well-being or even survival of human and non-human beings and ecosystems. For example, climate change, global poverty, loss of bio-diversity, pollution, and war. Sustainability challenges have social, economic, environmental and political dimensions. They have human-made causes, and there is the potential for human solutions.



Glossary of Icons



- Video



- Quiz



- Worksheets



- Editable Worksheets



- Various Media, e.g. Learning Apps



- Text to Read, or engage in active listening to others



- 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



Worksheets and Links

Start-Up

Activity 1. 'Me map'

Activity 2. 'Perspectives on sustainability'

- [The Sustainable development Goals](#) [Sir Ken Robinson worlds largest lesson animation film](#)
- [Planetary Boundaries Model of sustainability](#)
- [Brundtland Report](#)
- [Sustainability as justice](#)
- [3 Dimensional model of sustainability](#)
- [Ubuntu](#)
- [Sumak Kawsay](#)
- Other?

Activity 3. 'Sustainability values'

- **Dare to Lead Values Handout**
(© 2020 by Brené Brown, LLC)

Activity 4. 'Web of life'

- **LTP 1_1 Web of life cards**
- **ESD Expert Net: 10 Steps to Systems Thinking**



This website and accompanying manual and free to use printable resources, provide excellent examples of how to teach systems thinking <https://www.cceindia.org/systemsthinking/>

Activity 5. 'Investigating the SDGs as systemic issues'

- **[A printable set of the 17 SDG's](#)**
- The [UN SDG website](#), where you can find up to date information about the goal and targets.
- **ESD Expert Net: 10 Steps to Systems Thinking**



This website and accompanying manual and free to use printable resources, provide excellent examples of how to teach systems thinking <https://www.cceindia.org/systemsthinking/>

Activity 6. 'Apply systems thinking to your issue'

- **LTP1_1WS 3.1 Systems thinking and the SDGs**
- **LTP1_1WS 3.2 Systems thinking and local to global scales**



- These activities are informed by the excellent global citizenship education manual 'Get Global!' produced by Action Aid in 2003. The manual is free to download. 

Activity 7. 'Advice for the future'

- How to be a better ancestor 

Activity 8. 'Ideal futures'

- What is Educational Dialogue? 



Activity 9. 'Impact/feasibility matrix'

- This activity is informed by the excellent global citizenship education manual 'Get Global!' produced by Action Aid in 2003. The manual is free to download. 

Activity 10. 'River diagram'

- This activity is informed by the excellent global citizenship education manual 'Get Global!' produced by Action Aid in 2003. The manual is free to download. 

Activity 11. 'SMART action plan'

- how to write SMART goals 
- This activity is informed by the excellent global citizenship education manual 'Get Global!' produced by Action Aid in 2003. The manual is free to download. 

References

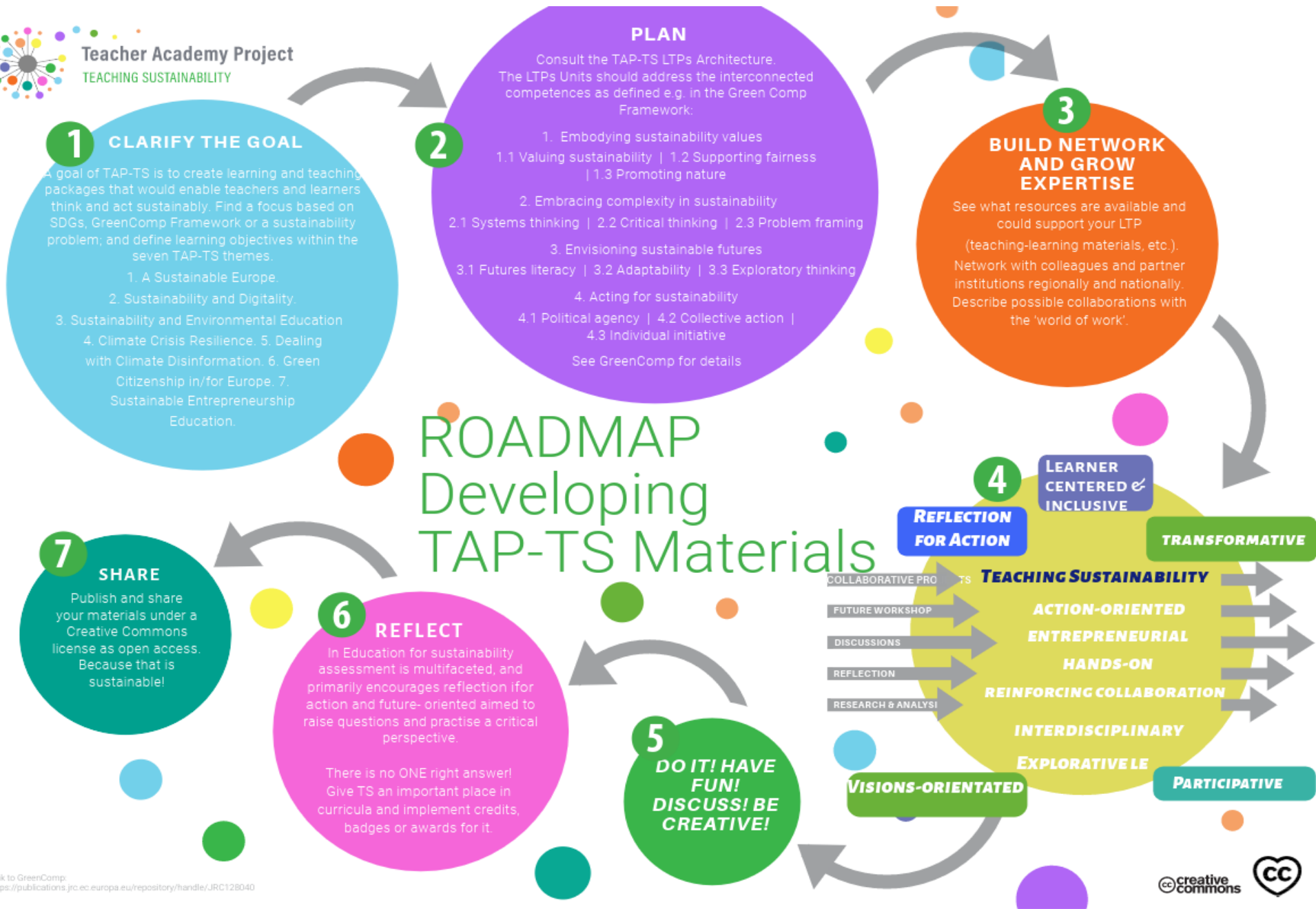
- Action Aid (2003) Get Global! A skills-based approach to active global citizenship: key stages three & four. Action Aid and CAFOD. Available to download: <https://resourcecentre.savethechildren.net/document/get-global-skills-based-approach-active-global-citizenship-key-stages-three-four/>
- Hoffmann, T., Menon, S., Morel, W., Nkosi, T., and Pape, N. (2022) Tens steps towards systems thinking: an education for sustainable development manual for teachers, educators and facilitators. Centre for environmental education, India. Available to download: <https://www.cceindia.org/systemsthinking/>

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	<p>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:</p> <ul style="list-style-type: none"> 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	<p>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</p>
3: Networking & Bundle Expertise	<p>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.</p>
4: Working through the design process	<p>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.</p>
5: ASSESSMENT DESIGN	<p>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.</p>
6: PUBLISH TO TAP-TS PLATFORM	<p>Can you and where can you publish your materials under a Creative Commons license as free as possible. Because that is sustainable!</p>



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
DARMSTADT

