

# Understanding Climate Change

## -What the Evidence Says

### Learning and Teaching Package 5

#### Unit 2: Distinguishing between Disinformation & Misinformation

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## Overview

This LTP introduces the topic of climate disinformation and promotes an understanding of the “Media Landscape” in which inaccurate information can emerge. It presents a range of material and associated pedagogies that explore secondary teaching and learning related to finding and working with dependable climate-science information as well as identifying and navigating climate mis- and disinformation, in its various forms.

Unit 2 addresses the challenge of distinguishing between climate misinformation and disinformation, and opens up a better understanding of the media landscape in which dis-/misinformation can emerge. It discusses the roles of social media in this, and considers what makes social media more susceptible to inaccurate information. Learners are presented with distinguishing terminology and gain the ability to identify inaccurate information. Within this unit, learners engage with examples of inaccurate information through knowledge based, active learning tasks. Investigation and teamwork activities allow for discussion of the role of media in relation to inaccurate information.

## Pedagogical Approach

This Learning and Teaching package encourages teachers to explore areas of social media and news agents that all individuals have access to. Unit 2 allows for educators and students to engage with active learning pedagogy and support knowledge-based understanding in the definition of what climate information is. The main pedagogical approaches include reflection, collaboration and technology assisted problem solving. This unit attempts to enable students to have a better understanding of the information that is provided via news agents and social media. The pedagogical approach is focused on active learning for not just educators but also for the secondary school students that will be utilizing these activities.

## The need to distinguish between Disinformation & Misinformation

Identifying Disinformation and Misinformation in an educational context allows for the promotion of accurate knowledge. Within Society misinformation and disinformation can distort the understanding of what climate change understanding is. Ensuring the students have access to accurate information and have the ability to identify what is falsified helps in understanding the real impact of climate change and the importance of taking action. By encouraging critical thinking students improve their ability to identify false information which helps to evaluate sources, gain the ability to question the validity of the information provided and then move forward to make informed decisions. Disinformation can diverge public opinion. Through education the emphasis of accurate information and critical thinking can help bridge gaps and adopt more unified approach that addresses climate change.

## Piloting of the materials within TAP-TS

Materials piloted in draft form with UCD Professional Masters of Education programme, UCD Dublin, IRELAND, participants in spring 2023 and autumn 2024 and subsequently verified for value at the TAP-TS Autumn School, Pirna, GERMANY, 27-28 Sept 2024.



## UNIT Overview

Main Topic	Target Group	Duration	Knowledge Area/ Subjects in School	Activities	Possible assessment
Unit 2: Distinguishing between Disinformation & Misinformation	Secondary school teachers and student teachers with activities for secondary level students	110 – 130 Minutes	Social media Climate change	<b>Start Up</b> <a href="#">Activity 1.</a> Definitions and misunderstanding <b>Development</b> <a href="#">Activity 2. How the media present climate disaster</a> <b>Consolidation</b> <a href="#">Activity 3.</a> Case Study on social media Disinformation <b>Follow-Up</b> <a href="#">Activity 4.</a> Identifying patters in inaccurate climate information; disinformation Tweets <a href="#">Activity 5.</a> Reflection on teacher practice	Self reflection questions, Teacher determined
<b>Intended Learning Outcomes</b>	<b>Having worked through the activities and materials, students will be able to:</b> ✓ Describe some climate misinformation & disinformation threats. ✓ Describe their understanding of inaccurate information in relation to environment, society and economy. ✓ Describe the impacts that disinformation spread in the aftermath of the climate-related disaster can have.				
<b>Prior Competencies</b>	<ul style="list-style-type: none"> <li>• No basic competencies needed, Basic level of understanding preferred:</li> <li>• Ability to collaborate and be cooperated to support group activities and have autonomy to participate. Digitally literate to a level that allows to engage meaningfully with the materials provided in this unit.</li> </ul>				
<b>Required materials</b>	<ul style="list-style-type: none"> <li>• Laptop and access to internet</li> <li>• Paper and writing materials</li> </ul>				
<b>Cooperation/ Networking</b>	Exploring and connecting to victims of climate disaster and community organizations related to climate disasters				
<b>Practical Notes for Teachers</b>	Educators should be aware that different groups of people may cause activities to be longer or shorter. Materials can vary depending on if the event is online or in person.				
<b>Addressing GreenComp</b>	<b>Embodying sustainability values</b>				
	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.		



<b>Embracing complexity in sustainability</b>		
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.
<b>Envisioning sustainable futures</b>		
	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.
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.
<b>Acting for sustainability</b>		
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

#### Definitions of Disinformation & Misinformation

**Estimated  
Duration**

##### Activity 1. Definitions and misunderstanding

##### **GreenComp Reference:**

2.2 Critical thinking

4.2 Collaborative action

##### **A Note for a Teacher:**

The learners should be encouraged to share what they think the topic is about and why it might be important. These preconceptions can then be addressed by use the fact sheet to show correct meanings of the two key words.



1. Use the Fact Sheet Attached to introduce the topic.



[DEFINITION OF DISINFORMATION&MISINFORMATION.pdf](#)

MIS-information – Mistakes and misunderstandings about Climate science and actions

DIS-information – Dismissive of climate science – Deliberately misleading

2.  Begin with a short group discussion on Disinformation & Misinformation  
Using the tweets attached in the worksheet identify which is misinformation & disinformation.
3.  Encourage questions on the danger of such a big account Elon Musk spreading misinformation

10 mins



## Development

### An introduction to social media disinformation: Canada Forest Fires 2023 [Case study]

**Estimated  
Duration**





#### Activity 2. How the media present climate disaster

##### **GreenComp Engaged:**

1.1 Valuing Sustainability  
1.3 Promoting nature  
2.1 Systems Thinking  
3.1 Futures literacy

**A Note for a Teacher:** Media is a complicated space for everyone and identifying what we can trust as a reliable source is an extremely important part in the battle against disinformation. While Mainstream Media is usually quite well self-policed, social media is certainly not. This is essentially a Class discussion led learning activity comparing previous thoughts and ideas on climate information with more formal UN definitions on both.

#### Description

1.  Play the Canada Forest Fires 2023 Video to introduce the topic to the students.  
Sky News 2-minute report on the Fires  
 <https://youtu.be/aAfKpBJl2ul?si=D-PSMwyP87WGtqi>
2.  Use to discuss the reliable source questions while going through the tweets WORKSHEET  
ATTACHED [UNIT 2 worksheets.pdf](#)
3.  Investigate the disinformation tweets on the Canada Wildfires together as a class examine  
WORKSHEET EXAMPLE 1 [UNIT 2 worksheets.pdf](#)

40 min



## Consolidation

### Climate Disinformation Digging Deeper

**Estimated  
Duration**




#### Activity 3. Case Study on social media Disinformation

*GreenComp Engaged:*  
3.2 Adaptability  
3.3 Exploratory thinking  
4.3 Individual initiative

**Preparation for Activities:** This activity focuses on a specific social media account that is well known for spreading disinformation – particularly climate disinformation. It involves discussing if it is a reliable source or not. Be familiar with the worksheet before displaying it to the class. Students placed into groups of 4.





**A Note for a Teacher:** Encourage students to dig deeper using the guidelines provided and questioning the source.

#### Description

1.  Digging Deeper Case Study Use our source guidelines:  
[Guidelines for Disinformation on Social Media.pdf](#)
2.  Class Discussion
  - Take 5 minutes to read through the Tweet below, (graph & reply.)
  - Share your thoughts with your team members
  - Come to a conclusion before sharing your thoughts with the rest of the classroom
3.  Some notes to take into mind with this exercise
  - Note the number of views the tweet has had – Potential Danger
  - Discuss through our questions is this reputable source – Guidelines
  - Some parts he passes our test - Name, Twitter tick,
  - What exactly does the tweet tell us?
  - Is there a link to where he gets the information?





30 min



	<p>4.  Investigating the account Digging Deeper- We look at his account Available on WORKSHEET</p> <ul style="list-style-type: none"><li>• Highlight the “skeptic” in the bio.</li><li>• The mention of mRNA vaccines.</li><li>• Looks quite professional, over 1 million followers.</li><li>• What are the dangerous of this person having so many followers.</li><li>•  Class Discussion</li></ul> <p>5.  The google search guide</p> <ul style="list-style-type: none"><li>• If you are ever uncertain about a source of information a google search can help. A search on Robert W Malone highlights an article by the New York Times Available on <a href="#"><u>UNIT 2 worksheets.pdf</u></a> </li></ul>	
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## Follow-Up

Group Activity		Estimated Duration
<b>Activity 4.</b> <b>Identifying patters in inaccurate climate information; disinformation Tweets</b>  <b>Green Comp:</b> 1.2 Supporting fairness 2.2 Critical Thinking 2.3 Problem framing 4.1 Political Agency 4.2 Collective action	<b>Preparation for Activities:</b> Students can be placed into pairs for this activity – each with a whiteboard or piece of paper to capture and later present the learning that emerges form considering the nature and patterns of disinformation posting to a social media.	30 mins
	<b>Description</b>  1.  Display the focus materials on a whiteboard or similar surface and distribute the activity worksheet <i>Disinformation Tweets_Canada Forest Fires: ‘climate change’ tweets <a href="#">UNIT 2 worksheets.pdf</a></i>  2. Structure a THINK, PAIR & SHARE activity <ul style="list-style-type: none"> <li> Take 5 minutes to look at the tweets on the worksheet – remembering our reliable source questions!</li> <li> Discuss your thoughts to your partner</li> <li> Share both you and your partners thoughts to the rest of the class.</li> </ul>	



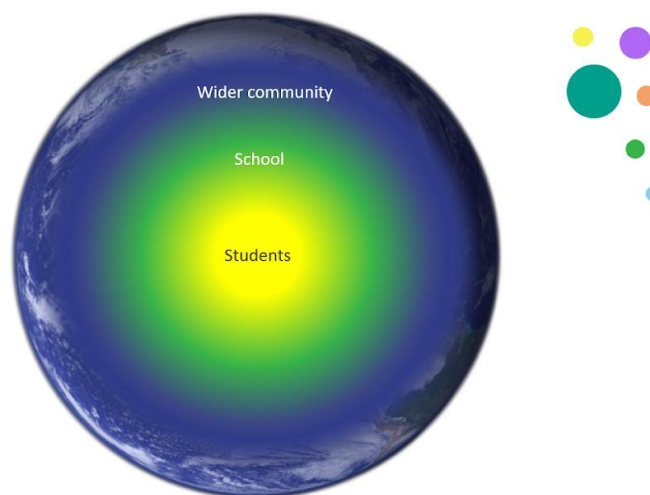
### Activity 5. Reflection on teacher practice

How can I better employ  
the Unit activities in my  
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**



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.



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?



#### Dimension 5. 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?



**Dimension 6. 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?



**Dimension 7. Assessment and feedback:**

☐ Have you adapted your original assessment intentions 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.



	<p>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.</p>	
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## 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

## Worksheets and Information Sheets

### Start-Up

#### Activity 1.

- **Worksheet**  [Fact Sheet – [DEFINITION OF DISINFORMATION&MISINFORMATION.pdf](#) ]



### Development

#### Activity 2.

- **Worksheet**  [Worksheet – [UNIT 2 worksheets.pdf](#) ]

### Consolidation

#### Activity 3.

- **Worksheet**  [Guidelines - [Guidelines for Disinformation on Social Media.pdf](#) ]
- **Worksheet**  [Worksheet – [UNIT 2 worksheets.pdf](#) ]

### Follow-Up

#### Activity 4.

- **Worksheet**  [Worksheet – [UNIT 2 worksheets.pdf](#) ]



## 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

<b>1: Clarify the Goal</b>	<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"> <li>2.1 A Sustainable Europe.</li> <li>2.2 Sustainability and Digitality.</li> <li>2.3. Sustainability and Environmental Education.</li> <li>2.4 Climate Crisis Resilience.</li> <li>2.5 Dealing with Climate Disinformation.</li> <li>2.6 Green Citizenship in/for Europe.</li> <li>2.7 Sustainable Entrepreneurship Education.</li> </ul>
<b>2: Competency Areas</b>	<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> <p>Each activity should be aimed to target a number of competences presented in the Framework, and connect to a set of learning outcomes for each LTP unit</p>
<b>3: Networking &amp; Bundle Expertise</b>	<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>
<b>4: Working through the design process</b>	<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>
<b>5: ASSESSMENT DESIGN And REFLECTION</b>	<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>
<b>6: PUBLISH TO TAP-TS PLATFORM</b>	<p>Can you and where can you publish your materials under a Creative Commons license as free as possible. Because that is sustainable!</p>



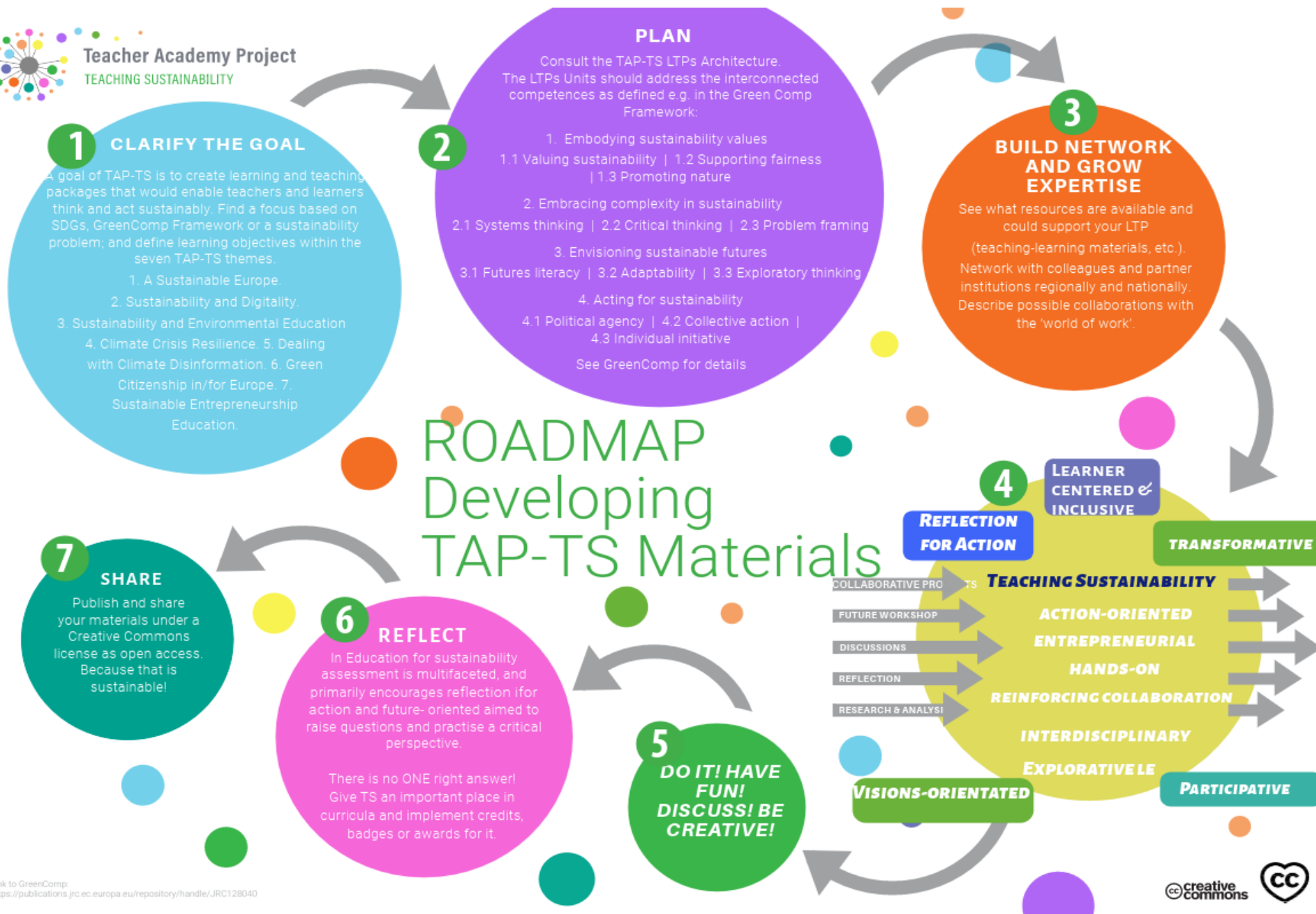
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TEACHING SUSTAINABILITY



# Teaching Sustainability: Learning activity Template

## 1. Introduce yourself!

<b>My name:</b>
<b>My country:</b>
<b>My role:</b>
<b>My school:</b>
<b>My class:</b>

## 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 [a short summary]

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 organised into the four areas, as below:

<p><b>- Embodying sustainability values, including the competences</b></p> <ul style="list-style-type: none"> <li>• valuing sustainability</li> <li>• supporting fairness</li> <li>• promoting nature</li> </ul>	<p><b>- Envisioning sustainable futures, including the competences</b></p> <ul style="list-style-type: none"> <li>• futures literacy</li> <li>• adaptability</li> <li>• exploratory thinking</li> </ul>
<p><b>- Embracing complexity in sustainability, including the competences</b></p> <ul style="list-style-type: none"> <li>• systems thinking</li> <li>• critical thinking</li> <li>• problem framing</li> </ul>	<p><b>- Acting for sustainability, including the competences</b></p> <ul style="list-style-type: none"> <li>• political agency</li> <li>• collective action</li> <li>• individual initiative</li> </ul>

**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

