Embracing Complexity in Sustainability: Systems Thinking

1. Description of the competence

Video link:

Video: https://www.youtube.com/watch?v=FW6MXqzeg7M

Recommended resources:

Presentation of the competence model

GreenComp The European sustainability competence framework

Description:

The competence area Embracing complexity in sustainability focuses on empowering learners with systemic and critical thinking. It encourages them to better assess information, challenge unsustainable practices, and scan systems by identifying interconnections and feedback loops. Framing challenges as sustainability problems helps learners understand the scale of issues and identify everyone involved. Technological change, digitalisation, and globalisation have increased our society's complexity and accelerated socioecological problems such as climate change and loss of biodiversity. Thinking in systems enables learners to identify feedback mechanisms, intervention points and interactive trajectories. Systems thinking can be understood as a tool for evaluating options, decision-making and taking action.

2. Workshop components

Duration: 120 min

Digital tools suggested:

- Mentimeter: For interactive polls and icebreakers
- Padlet: For collaborative brainstorming and scenario building. Also useful for ice breakers or energizers
- Canva: For creating visual representations
- Loopy: For creating simple cause-and-effect models

Competencies exercised:

Systems thinking, Critical thinking, Futures literacy, Individual initiative

3. Workshop overview

Annotation:

An indoor/outdoor or classroom-integrated activity to promote systems thinking in sustainability through observation, discussion, reflection, and digital storytelling.

Objectives:

- To understand systems thinking and its relevance to sustainability
- To identify and analyze environmental challenges using digital tools
- To understand how everything in nature is connected
- To learn how small changes can make a big impact

4. Detailed session structure

Evocation (15 minutes):

Tools:

Mentimeter

Activities:

- Question to ask (5 minutes): Using Mentimeter, poll: "*What is the biggest environmental problem in your/our community?*"
- Discussion (10 minutes): *Are these problems connected? How are they connected?*

Resources:

Video **tutorial on how to use Mentimeter**

Understanding (75 minutes):

Tools:

Loopy, **Canva**, **Padlet**, **Badgecraft**

Activities:

- Systems thinking in action (30 minutes)
- Watch a short video - The story of stuff (YouTube) - The video serves as an engaging introduction to the concept of systems thinking, specifically within

the context of consumer goods and the environment. It explores how everyday actions, like buying products, are part of a much larger system that includes production, consumption, and disposal.

- Activity: Use Loopy to create a simple cause and effect system (*e.g. What happens when we waste water, or food?).*

  (Loopy is a digital tool used to create simple cause-and-effect models that help visualize how different factors in an environment (or any system) are interconnected. The goal here is to get participants to model the impacts of their actions on a larger system.

  For example:

  Water waste: Participants might create a system that shows how wasting water can lead to overuse of resources, depletion of water sources, and increased energy use to treat and pump water, thus worsening environmental and economic outcomes.

  Food waste: Another example could be how food waste leads to increased landfill use, methane gas emissions, and wasted agricultural resources.)

- Step 1: Participants select an issue (e.g., water or food waste).
- Step 2: Using Loopy, they create a series of interconnected elements that show how wasting water or food leads to other effects. For example, wasting food could be linked to increased demand for more agricultural production, which could lead to greater environmental degradation, resource depletion, and increased CO2 emissions.
- Step 3: After the model is created, participants can analyze it to see how small changes (such as reducing food waste) can affect multiple parts of the system and bring about significant positive changes.
- Discuss how small changes can make a big difference.

  (Leverage Points: In a complex system like the environment, small changes (e.g., reducing food waste, conserving water) can have disproportionately large positive effects on the whole system. This principle is a key component of systems thinking.

  Ripple Effects: Small individual actions can lead to bigger collective impacts. For example, reducing water waste can reduce energy use, lower carbon emissions, and save money, all of which contribute to a more sustainable environment.)

- How the Discussion Could Go: Facilitator can guide participants to reflect on the "ripple effect": *How does changing one habit (such as turning off the tap while brushing teeth) have a larger impact?*
- Participants can discuss how they can take action in their daily lives and how those actions connect to larger environmental or social outcomes.

- Solve a real problem in your community (45 minutes)
- Working in groups: Pick a problem from your community. (*Examples of problems could include: Excessive waste production (e.g., plastic waste, food waste); Water pollution or wastage; Poor waste management practices; Deforestation or loss of green spaces; Air quality issues (e.g., from traffic or industrial activities); Lack of recycling or sustainable practices in the community...)*
- Create a mind map (causes, effects, solutions) using Canva.
- Step 1: Using a mind map, groups will first identify the root causes of the problem. *For instance, if the issue is excessive plastic waste, the causes could include over-reliance on single-use plastics, lack of recycling education, or insufficient infrastructure for waste disposal.*
- Step 2: Next, groups will map out the effects of the problem. *For example, plastic waste might lead to pollution in rivers, harm to wildlife, and damage to ecosystems.*
- Step 3: Finally, the group will brainstorm potential solutions to the problem. These solutions might include strategies like: *Organizing community clean-up days, Creating awareness campaigns to reduce single-use plastic, Setting up local recycling stations, Partnering with local businesses to reduce packaging waste.*

Resources:

Video **tutorial on how to use Mentimeter**
Tutorial on how to use Loopy
Video **tutorial on how to use Canva**

Reflection (30 minutes):

Tools:

Padlet, **Badgecraft**

Activities:

- The goal of this segment is to encourage participants to take concrete, individual actions toward sustainability, inspired by what they've learned and discussed throughout the workshop. This activity encourages reflection and empowers participants to commit to making a positive difference, both in the short term and long term.
- What can you do? (Each person writes one action on Padlet)
- Closing reflection: One thing I learned today... (*Each participant shares something new they've learned about sustainability or systems thinking. This could be an insight about environmental issues, a concept they didn't know before, or a realization about how their actions affect the world*).
- What can I do in a longer time period? (*Participants are encouraged to think about their long-term sustainability goals. They may choose to set a personal goal, such as reducing their carbon footprint over time or becoming a sustainability advocate in their community*).
- One action I will take this week... (*homework to get the Badge - Participants visit the Badgecraft website and join the activity to earn a badge.*).

Resources:

None

5. Resources used and additional info

Links: Suggested Reading: **GreenComp Framework**

Toolkit: **Digital Tools Guidebook**