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TEACH4SD

Online portfolio tool for evaluation

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Centres of Vocational Excellence

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1 Introduction

As an educator, you are probably wondering now how you can evaluate these sustainability competences. It is important to remember that evaluating sustainability competences is different from traditional assessments. Sustainability challenges **do not have one "correct" answer as the focus is not merely on knowledge, but also on skills and attitudes. Moreover, sustainability challenges are wicked problems.** They are complex, interconnected, and resistant to simple solutions. They involve multiple stakeholders with conflicting interests, span across environmental, economic, and social domains, and often lack clear definitions or endpoints. Actions taken to solve one aspect can unintentionally worsen another, and solutions must adapt over time as conditions and knowledge evolve (Hisschemöller & Hoppe, 2018; Ostrom, 2009). **This makes sustainability not just a technical issue, but a deeply systemic and societal one.**

That is why, instead of looking only at the outcome, the assessment should **focus mainly on the process:** how learners approach problems, collaborate, and reflect on their learning.

To guide your evaluation process, it is essential to think about how the assessment can foster not just knowledge, but also the **development of key competences for sustainability** like valuing nature, systems thinking, and collaboration. The challenge lies in choosing evaluation types and methods that align with these broader goals. Instead of simply focusing on a final product or answer, consider how you might assess the steps learners take along the way: how they interact with others, how they reflect on their learning, and how they apply their knowledge to real-world situations.

While there are specific methods to **track progress**—such as portfolios, peer assessments, or self-reflections—the key is selecting the right approach based on the competences you aim to develop. For example, **rubrics** are a powerful tool to make feedback clear and objective. They allow you to outline specific levels of achievement for key competences, helping you assess the development of skills. Meanwhile, **portfolios** can serve as a comprehensive tool, where learners track their own progress through reflections, project reports, or examples of problem-solving. Through **peer assessment, self-assessment, or feedback from external professionals**, learners can gain insights into their own learning. The act of reflecting on their own progress or receiving feedback from others not only reinforces the learning process but also strengthens their sense of responsibility and engagement with sustainability issues.

In the following sections, we will explore both the type and method of evaluation in the context of sustainability. Choosing the **evaluation type means deciding what we want to assess**: are we focusing on the process or the final product? Do we want to evaluate the learner's journey or the knowledge they have gained? Later, we will look at the **evaluation method—how we actually carry out the assessment**. Will we use a portfolio or a reflection? Peer assessment or self-assessment? Selecting the right method—and continuously reviewing it—helps educators align their approach with learning goals and better support their learners.

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2 Evaluation types

There are several ways to organize an evaluation, but before selecting a specific method, educators should first consider the type of evaluation they want to use. This choice depends on the purpose of the evaluation and the goals it aims to achieve. Often, the decision comes down to formative versus summative evaluation, and/or product versus process evaluation. Understanding the differences between these types is essential, as it helps educators choose the most appropriate method for assessing learning and progress.

2.1 Formative evaluation

Formative evaluation monitors learning and provides ongoing feedback that can be used to **improve education and learning throughout the process**. It is flexible and informal, and for this reason the evaluation results are hard to express in a numerical grade. As formative assessments help learners identify strengths and areas for improvement, they encourage a growth mindset and learner engagement. For educators, it provides feedback on how to improve or adjust instructions as needed (Bhat & Bhat, 2019; Dolin et al., 2017).

Some examples of formative evaluation methods are:

- Reflection journals
- Peer reviews during a project
- In-class (group) discussions
- Informal quizzes in class introducing a new topic (not to grade)
- Concept maps

Formative evaluation is often used during the process of teaching. As such, it is more of a pathway compared to summative evaluation, and thus suits teaching about sustainability very well. And as a bonus, since sustainability is about long-term thinking and impact, integrating reflective formative assessments (e.g., reflection journals) helps learners become more mindful of their own ecological and social choices—aligning well with the goals of transformative education. With transformative education we mean a learning approach that empowers individuals to critically reflect on their beliefs, values, and worldviews, leading to meaningful personal and societal change. It encourages active engagement, social responsibility, and the development of skills needed to address complex global challenges like sustainability (Concina, 2022; Jucker & Mathar, 2014).

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2.2 Summative evaluation

Summative evaluation aims to **evaluate learner learning at the end of a certain course** or unit, by comparing it against a standard or benchmark. These are structured and formal evaluation methods where learners receive a grade indicating how well they scored. They provide accountability and measure learning outcomes (Bhat & Bhat, 2019; Dolin et al., 2017).

Some examples of summative evaluation methods are:

- Written tests or exams;
- Group presentation at the end of a project;
- Quizzes to measure how much learners have learned after finishing the course.

While relying solely on summative evaluation may not be ideal for assessing sustainability competences—since developing these skills takes time, reflection, and personal transformation—effective sustainability education often blends both formative and summative approaches. Formative assessments can support critical thinking, collaboration, and systems thinking as learners engage with complex sustainability challenges. Summative assessments, on the other hand, help validate whether learners can synthesize and apply what they have learned in real-world contexts.

2.3 Product evaluation

Next to the differences between formative and summative evaluation, another common distinction is made between product and process evaluation. **Product evaluation is the systematic assessment of the outcomes, results, or final deliverables of a project** (e.g. portfolio), program, or intervention related to the competences the learners should acquire. It focuses on determining whether the intended goals were achieved and how effective or valuable the final product is to its users or stakeholders. This type of evaluation is typically conducted after the implementation phase and is crucial for understanding the impact and quality of what has been produced (Frey, 2018; Pieters et al., 2019).

Some examples of product evaluation methods are:

- Portfolios;
- Final reports;
- Presentations;
- Sustainability solutions or prototypes.

Product evaluation is typically carried out after implementation and focuses on results and impact. In sustainability education, it helps assess whether learners can generate meaningful solutions or insights that reflect core sustainability principles.

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2.4 Process evaluation

Process evaluation helps assess **how effectively sustainability education is being implemented** and whether it is fostering the intended competences in learners. Unlike outcome evaluations that focus on the final product, process evaluation examines how the learning experience unfolds. This allows educators to identify strengths, challenges, and opportunities for improvement throughout the learner's journey. Typically process evaluation takes place during the learning process of the learners, allowing for quick intervention (Frey, 2018; Pieters et al., 2019).

Some examples of process evaluation methods are**:**

- Surveys and questionnaires;
- Classroom observations;
- Reflections;
- Focus groups and interviews;
- Learner self-assessments and portfolios.

Process evaluation thus focuses on learning dynamics and tries to identify strengths and challenges, while enabling real-time intervention**.** Process evaluation is particularly valuable in sustainability education, where interdisciplinary collaboration and systems thinking are essential but often challenging to implement.

2.5 Overlaps and intersections

While these four types of evaluation serve distinct purposes, you may have already noticed some overlap—summative and product evaluation often go hand in hand, just as formative and process evaluation share similarities. Still, each type brings its own perspective, and in practice they often intersect in meaningful ways, especially in dynamic, competency-based fields like sustainability education. In the following paragraphs, we will explore how these types of evaluation can complement one another and be used together in a well-rounded assessment approach.

Formative and summative evaluation

A formative activity (e.g., peer feedback) may also be used as a summative activity if it contributes to a final grade. A summative project may include formative elements, such as iterative drafts or feedback cycles.

Formative and process evaluation

Formative assessments often serve as process evaluation tools, helping educators monitor learning dynamics and intervene when needed. Reflection journals and concept maps are both formative and process-oriented, capturing the learner's thinking process as it evolves.

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Formative and product evaluation

A learner's portfolio can be a formative tool when used to track progress and provide feedback. Draft versions of final products (e.g., sustainability reports) can be evaluated formatively to guide improvement before final submission.

Summative and process evaluation

A summative evaluation may include process insights, such as assessing how learners collaborated or applied systems thinking throughout a project, meanwhile rubrics for final presentations may include criteria related to the learning journey, not just the result.

Summative and product evaluation

Summative assessments often focus on products, for example final reports, presentations, or sustainability solutions. Such products are graded and used to validate learning outcomes.

Process and product evaluation

A product evaluation may include insights from the process, such as how the learner developed the work or overcame challenges, meanwhile the process evaluation may inform the product evaluation by revealing how effectively learners engaged with the learning journey.

In fact, there are evaluations that combine the 4 types of evaluation. To give a concrete example, a learner portfolio can simultaneously serve as: **a formative tool** (tracking progress), a **summative artifact** (graded at the end), a **process evaluation method** (documenting learning evolution) and a **product evaluation object** (assessing final competences). This means that one evaluation may serve multiple (evaluation) goals.

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3 Evaluation criteria

Once the evaluation type is chosen, a second step is to define the evaluation criteria. To help learners understand what is expected of them, it is essential to **clearly communicate the evaluation criteria used during process assessments**. Using clear evaluation criteria helps ensure reliable assessments, especially when learners or external parties are involved. Various sources, such as guidance discussions, portfolios, reports, and self-evaluations, can provide a comprehensive view of the learner's learning process.

Evaluation criteria are ideally linked to the SD Profile Tool, specifically developed for the Teach4SD project. By exploring this tool, learners are introduced to the GreenComp framework, developed by the EU, and its four competence areas. Since the tool covers a selection of competences within each area—resulting in varied responses, it offers an indicative snapshot of the skills, attitudes and knowledge that learners already possess, rather than a full picture of their entire skillset. Still, these results provide a valuable starting point for the next phase of learning, where learners actively work on developing and expanding their competences. For example, they might use a portfolio to reflect on which competences they want to focus on, giving them greater ownership of their learning journey.

Educators can support this process by offering additional tools, such as digital learning environments where learners can further develop their skills under guidance. Of course, different tools can be used to spark discussion around sustainable development. One alternative to the SD Profile Tool is the Stairway to SDG application (https://stairwaytosdg.eu/en/app), which educators may prefer if they want to explore how learners engage with individual Sustainable Development Goals rather than focusing on specific competences.

In the following paragraphs, we will present several evaluation methods that encourage reflective thinking, helping learners interpret their results, and plan their next steps. We have chosen to highlight those methods that best support the development of sustainability competences in educational settings. These methods include: rubrics, reflection, portfolios, peer evaluation, surveys, observations, and focus groups. While this is not an exhaustive list, we have intentionally excluded methods such as testing or document analysis. Although they can be used, they tend to be more passive forms of evaluation and are less suited to fostering the active, transformative learning needed for sustainability competence development.

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4 Rubrics

4.1 Using rubrics

Rubrics are structured assessment tools that articulate expectations and define levels of performance across specific criteria. In sustainability education, rubrics can be used not only to evaluate learning outcomes but also to **guide learning processes**, promote **transparency**, and support **self-assessment** and **reflection**. When aligned with sustainability competences—such as critical thinking or collaboration—rubrics help learners understand what is expected and how their work contributes to broader sustainability goals (Nkhoma et al., 2020; Olson & Krysiak, 2021).

4.2 Purpose of rubrics

More precisely, a rubric is a method for evaluating assessment criteria. As such, rubrics are highly effective for evaluating skills and competences (Hopster-den Otter & de Vries, 2023). In general, rubrics take the form of a holistic rubric—where all skills and competences are evaluated in a single score—or an analytic rubric, in which each individual skill and competence is assessed separately. In the context of the GreenComp framework, one typically opts for analytic rubrics, allowing for the separate evaluation of multiple competences.

4.3 Suggestions for rubrics

When used as an evaluation tool, it is important to recognize that a rubric is often perceived as an instrument of summative assessment. Learners may interpret a rubric as focusing primarily on the final grading of their work, rather than as a starting point for improvement (Kneyber et al., 2022; Wiliam & Leahy, 2024). To use rubric formatively, educators should clearly communicate that the rubric serves as feedback for learning and development, marking the beginning of a continuous learning journey.

4.4 Example of rubrics

To provide educators with a functional tool, we have developed a functional rubric that can be used (or adapted) to assess the GreenComp competences.

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In the following table, you can find an example of a rubric for each of the GreenComp competences. Educators may provide these to the learners upfront in the context of other formative evaluations or score them based on what they see in the practice.

GreenComp competency	Emerging (0)	Developing (1)	Proficient (2)	Advanced (3)
Valuing sustainability: Aligning values and actions	Limited reflection on values or sustainability alignment.	Begins to evaluate personal values in sustainability contexts.	Aligns actions with sustainable principles and negotiates trade-offs.	Promotes global responsibility and sustainable development values.
Supporting fairness: Advocating for equity	Limited understanding of equity and justice in sustainability.	Begins to support inclusive growth and fairness.	Advocates for justice and decent work for all.	Empowers marginalized groups and accelerates inclusive progress.
Promoting nature: Valuing the biophysical environment	Limited awareness of environmental issues or human impact.	Shows growing concern for nature and human-environment interactions.	Understands and promotes environmental sustainability and justice.	Champions nature-based solutions and intergenerational equity.
Systems thinking: Understanding inter-connectedness	Sees issues in isolation; struggles with holistic thinking.	Begins to recognize system relationships and uncertainty.	Applies systems theory to sustainability challenges.	Thinks holistically across domains and scales; embraces uncertainty.
Critical thinking: Embracing complexity	Accepts information at face value; limited questioning of norms or assumptions.	Begins to question norms and reflect on personal values.	Critically assesses sustainability discourse; challenges assumptions and reflects deeply.	Consistently questions norms and integrates diverse perspectives to challenge the status quo.
Problem framing: Addressing complex changes	Struggles to define sustainability problems or apply frameworks.	Begins to use frameworks and consider multiple perspectives.	Frames problems inclusively and draws on interdisciplinary knowledge.	Develops equitable solutions using diverse frameworks and adapts to complex challenges.
Futures literacy:	Has difficulty coping with uncertainty or	Begins to assess risks and consequences;	Envisions future scenarios and	Empowers others to shape preferred futures;

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Envisioning and shaping futures	envisioning future scenarios.	shows interest in future planning.	manages change effectively.	applies precautionary principles and handles complexity.
Adaptability: Reflecting and improving in societal contexts	Shows limited reflection on personal beliefs and societal role; rarely adapts behavior.	Begins to reflect on personal views and societal issues; occasionally adapts actions.	Regularly reflects on beliefs and societal role; adapts actions using emotional intelligence.	Continuously improves self through deep reflection and emotional/social learning in sustainability contexts.
Exploratory thinking: Designing sustainable futures	Struggles to generate innovative ideas or recognize systemic barriers.	Begins to explore creative solutions and understand the historical roots of unsustainability.	Designs innovative strategies and experiments for sustainability.	Leads in developing transformative actions; identifies and overcomes systemic barriers creatively.
Political agency: Engaging in policy and change	Limited engagement with political processes or policy goals.	Begins to understand political responsibility and policymaking.	Engages in policy advocacy and collaborates for sustainability goals.	Leads transformative political change; communicates and mobilizes effectively.
Collective action: Collaborating for sustainability	Participates in group work but struggles with empathy and knowledge sharing.	Collaborates with some empathy; shares knowledge inconsistently.	Engages empathetically with diverse stakeholders; shares and learns from others effectively.	Leads inclusively; motivates diverse groups and fosters deep collaboration and knowledge exchange.
Individual initiative: Acting for sustainability	Shows limited awareness of political systems or personal sustainability potential.	Identifies some sustainability opportunities and political responsibilities.	Actively contributes to sustainability and engages with political accountability.	Navigates systems effectively; drives community and planetary improvements.

Based on https://sdprofile.eu/en/glossary

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4.5 Creating or adapting rubrics

When developing additional rubrics or when adapting existing rubrics to your own evaluation needs, we propose to keep the following guidelines in mind (based on the guidelines created by Sanders, 2017):

1) Keep level descriptions short and simple, using language that learners can easily understand.
2) Use descriptive language rather than comparative, evaluative, or normative terms. Avoid labels like poor, good, correct, or excellent.
3) Where possible, describe performance levels in terms of observable actions or product characteristics.
4) Ensure each scale represents only one dimension. If assessing two dimensions simultaneously, include all possible combinations in the scale.

✗ Example to avoid:	☑ Better alternative:
2 = fully complete and entirely correct	2 = fully complete and entirely correct
1 = fully complete and partially correct	1 = mostly complete and/or partially correct
0 = incomplete and entirely incorrect	0 = incomplete and/or entirely incorrect

5) Make sure the scale covers the full range of performance, to avoid clustering around middle scores.
6) Ensure equal intervals between levels — the quality difference between, for example, level 0 and 1 should match the difference between level 2 and 3.
7) Keep performance levels distinct and non-overlapping.
8) Start with the highest level, then the lowest, and finally the intermediate levels.
9) The highest level should be challenging but achievable.
10) Keep the content of descriptions consistent across levels — only the quality of execution should vary, not the object of assessment. For example, do not describe low writing performance only in terms of spelling errors and high performance only in terms of creativity.
11) In analytical rubrics, ensure that performance levels are comparable across all aspects — a score of 4 in one category should reflect the same level of quality as a 4 in another.

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5 Reflection

5.1 Using reflection

Reflection on the results of the skills navigation tool can take various forms, depending on the context. As mentioned earlier, there is no one-size-fits-all approach. The sort of reflective questions chosen should -especially in the case of the reflection- align with the course objectives and the learners' skill levels. For instance, learners preparing for blue-collar professions may benefit from a different reflection method or approach than those aiming for white-collar careers. Tailoring the reflection process ensures that it remains meaningful and accessible to all learners (The future of vocational education and training in Europe (Synthesis report), 2023).

5.2 Purpose of reflection

Reflective questions are a way to evaluate the progress of the learner. The main advantage of such questions is that they help to **promote deeper learning as they** encourage learners to move beyond surface-level understanding and engage in critical thinking. They help learners connect theory to practice and internalize concepts more meaningfully. Moreover, they foster self-awareness and growth, **encouraging ownership and responsibility**, which align with the goal of teaching about sustainable development. When learners see the relevance of their experiences and articulate their progress, they may be more likely to feel motivated and engaged in their learning process, but also in applying what they have learned (Alam, 2022; Varga et al., 2007).

5.3 Suggestion for reflection

On the meta level of the learner, good reflective questions help learners to further develop the ability to think about their own thinking. This metacognitive awareness improves problem-solving, planning, and adaptability in future learning situations.

From the point of view of the educators, reflection responses may provide valuable insights for educators, allowing for more personalized feedback, but also enabling the educator to identify the needs of the group of learners present.

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5.4 Example of reflective questions

While several types of reflective questions exist, we use the Rolfe et al. methodology (Rolfe et al., 2001) to formulate some examples of reflective questions. Doing so, this methodology discerns three types of questions: the *what* question, the *so what* question, and the *now what* question. The Rolfe et al. methodology is a simple approach that is flexible and applicable in a multitude of contexts, although it was originally developed for the healthcare sector. Educators may thus decide to – and are even invited to – further refine or expand the following question set, based on their own insights and experiences.

1) In answering the **"What"** question, the learner describes the situation or what he observes in the outcomes of the tool. With regards to the results of the skills navigation tool, the educator can pose (amongst others) subsequent questions:
    a) What sustainability skills, attitudes, and knowledge do you master?
    b) What sustainability skills, attitudes, and knowledge do you still need to master?
    c) What output of the SD profile tool surprised you in a positive or negative fashion?
2) In answering the **"So what"** questions, the learner is induced to analyze the results of the navigation tool, helping the learner to identify why competences have importance
    a) So, what does it mean for your environment/the world that you still need to master sustainability competence X?
    b) So, what does it mean for your environment/the world you already master sustainability competence X?
    c) So, what do you understand from the overall outcome of the tool? How do these competences impact each other?
    d) So, what does it mean that you were surprised by the outcome of the tool?
    e) So, what can you learn from the sustainability action of others/other learners to improve your competences?
    f) So, what can you teach others/other learners to improve their sustainability competences?
3) In answering the **"Now what"** question, the learner is guided by the question towards undertaking action, inducing them to further develop their competences
    a) Now what are you going to do to improve some of the sustainability competences you do not have yet?
    b) Now what are you going to do to further improve the sustainability competences you already have?
    c) Now what are you going to do to further improve the sustainability competences of your classmates?

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The advantage of these reflection questions is that they help systematically address the different aspects of the SD Profile Tool. Moreover, they help the learners to think about what this means for themselves and the world surrounding them, inducing a call to action. Based on the answers to these questions, rubrics, a portfolio or coaching sessions can be created to further guide the learners in developing their competences.

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6 Portfolios

6.1 Using portfolios

In portfolio assessments, learners compile a portfolio displaying their learning, reflections, and projects related to sustainability. In the context of the sustainability competences, they ideally include components such as insights on personal growth in sustainability understanding and actions, descriptions and outcomes of projects and initiatives undertaken and detailed action plans and reflections on personal or group sustainability actions.

The advantages of a portfolio are that the learners will reuse their skills, attitudes and knowledge so they will better master them, are able to identify gaps in their competences and organize their knowledge in a better fashion (Niemczyk et al., 2022; Polyakova, 2023).

6.2 Purpose of the portfolio

Portfolios are both **formative and summative assessment tools** that allow learners to document their **learning journey**, reflect on their **personal development**, and showcase **projects and actions** related to sustainability. Portfolios have several purposes:

- Reinforcement of learning: Learners revisit and reuse their knowledge and skills, deepening mastery (of sustainability competences).
- Identification of learning gaps: Learners and educators can spot areas needing further development.
- Organized knowledge: Learners structure their learning, making connections across disciplines.
- Empowerment: Portfolios foster ownership and agency in the learning process.
- Holistic assessment: Combines cognitive, emotional, and behavioral dimensions of learning.

The use of portfolios aligns very well with the **GreenComp framework**, which emphasizes competences such as **systems thinking**, **critical thinking**, **collective action**, and **valuing sustainability**.

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6.3 Portfolio content suggestions

Learners should compile a variety of materials that demonstrate their engagement with sustainability or, for example, SDGs and GreenComp competences. The format of the portfolios may obviously differ depending on the environment in which the SD is taught, and we recommend that educators reflect on what works best in their environment. To provide inspiration to the educators, we provide here several ideas of the content of such portfolios

1. Personal Growth Reflections

- Journals or essays on how their understanding of sustainability evolved.
- Reflections on attitudes, values, beliefs, and emotional responses to sustainability challenges.
- Self-assessments that reflect on the learners' sustainability competences.

2. Project Documentation

- Descriptions of sustainability-related projects (e.g., waste reduction, awareness campaigns).
- Evidence of planning, implementation, and outcomes.
- Group collaboration reports and stakeholder engagement summaries.

3. Action Plans

- Development of detailed plans for personal or group sustainability actions.
- Reflections on successes, challenges, and lessons learned.
- Visuals such as diagrams, timelines, or strategy maps.

4. Competence Mapping

- Learners map their activities to specific sustainability competences.
- Use rubrics to assess growth in areas like **adaptability**, **political agency**, or **supporting fairness**.

6.4 Suggestions for portfolios

To further improve the learning experience of the learners, we propose that the educator takes several measures to improve the learning experience:

- **Introduce the GreenComp framework early** so learners understand the competences before they start with the portfolio.

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- **Use an analytic rubric** to assess each sustainability competence separately. Knowing what is important will help the learners focus on what is important.
- **Encourage regular moments of reflection while the learner builds the portfolio**—not just at the end of the course.
- **Provide feedback loops** to guide the improvement of the learners.
- **Allow creative formats**: digital portfolios, blogs, videos, or physical folders.
- **Induce learners to formulate actions** for themselves that align with their studies/talents/goals. Educators should make sure the actions and goals formulated are SMART (specific, measurable, attainable, relevant, and timely).

As can be derived from the 'portfolio content suggestions', a portfolio may be built in the classical way but may be enriched by adding the use of tools or other methodologies to enrich the learning process.

- **Digital platforms**: Google Sites, Padlet, Mahara, Miro or another platform supported by your institution.
- **Rubrics**: Based on GreenComp's 12 sustainability competences.
- **Peer-evaluation**: Learners assess each other's portfolios using structured criteria.
- **Reflection**: Ask learners to connect their moments of personal growth directly to the GreenComp framework by explaining which competences they activated, how they demonstrated them, and what next steps they envision for developing those competences further.
- **Surveys**: Use surveys to gauge changes in learners' attitudes and understanding before and after the creation of a portfolio.
- **Peer and self-assessment**: Encourage reflective practice and feedback through peer reviews and self-assessments. For example: "Rate your confidence in engaging in collective action for sustainability from 1 to 5. Provide examples to support your rating."

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7 Peer-evaluation

7.1 Using peer-evaluation

Peer-evaluation is a powerful pedagogical tool that can enhance learner engagement and deepen understanding of complex topics such as sustainable developments. By evaluating each other's work, learners are encouraged to reflect critically not only on their peers' contributions but also on their own learning. In the context of sustainable development education, peer-evaluation fosters collaborative learning, promotes diverse perspectives, and helps learners connect global challenges to local actions. It also supports the development of key competences such as communication, empathy, and systems thinking—essential for addressing sustainability issues (Concina, 2022; Jucker & Mathar, 2014).

7.2 Purpose of peer-evaluation

The primary purpose of peer-evaluation in sustainability-related learning is to cultivate reflective and participatory learning environments. It allows learners to assess how well their peers understand and apply sustainability concepts, while also receiving constructive feedback on their own work. This process encourages accountability and helps learners identify areas for improvement. Moreover, peer-evaluation can democratize the classroom by giving value to learner voices and promoting mutual respect. When used effectively, it shifts the focus from grades to growth, aligning well with the transformative goals of sustainability education (Concina, 2022; Jucker & Mathar, 2014).

7.3 Suggestions for peer-evaluation

To ensure peer-evaluation is effective and meaningful in sustainability education, educators should consider the following best practices:

1. **Establish clear criteria**
   Use rubrics that align with sustainability-related competences such as critical thinking or collaboration. Make sure learners understand the criteria before beginning the evaluation.
2. **Provide training and guidance**
   Teach learners how to give constructive feedback. Role-playing or sample evaluations can help them practice respectful and useful critique.

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3. **Ensure anonymity and fairness**
   Where appropriate, anonymize evaluations to reduce bias and encourage honest feedback. Consider using digital tools to facilitate this.

4. **Integrate reflection**
   Encourage learners to reflect on the feedback they receive and how it influences their learning. Reflection journals or follow-up discussions can deepen this process.

5. **Use peer-evaluation formatively**
   Incorporate peer feedback throughout the learning process—not just at the end—so learners have time to revise and improve their work.

6. **Monitor and moderate**
   Educators should oversee the peer-evaluation process to ensure it remains constructive and inclusive. Intervening, when necessary, helps maintain a positive learning environment.

7.4 Examples of peer-evaluation in practice

Imagine a classroom project where learners work in groups to design a local initiative addressing SDG 12: Responsible Consumption and Production. After presenting their proposals, each group evaluates another group's project using a structured rubric that includes criteria such as feasibility, creativity, impact, and alignment with sustainability principles. Learners provide written feedback and discuss their evaluations in a follow-up session. This peer-evaluation process not only reinforces their understanding of sustainability but also helps them refine their own ideas based on peer insights. It transforms the classroom into a collaborative space for co-creation and shared learning.

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8 Surveys

8.1 Using surveys

Surveys in sustainability education serve not only as tools for data collection but as pedagogical instruments that foster learner engagement, reflection, and agency. Unlike traditional assessments, surveys can be designed to elicit learners' values, perceptions, and behavioral intentions regarding sustainability. Their use aligns with participatory learning and constructivist learning, which emphasize learner-centered approaches and contextual understanding. When integrated thoughtfully, surveys can help educators tailor content to diverse learner profiles and promote inclusive dialogue around global challenges (Waltner et al., 2019, 2022).

8.2 Purpose of surveys

Surveys offer a structured yet flexible method to explore learners' awareness, attitudes, and readiness to act on sustainability-related issues. They support **transformative learning** by encouraging learners to critically examine their assumptions and connect personal experiences to global concerns (Taylor & Cranton, 2012). In the context of sustainability—surveys can reveal learners' social positioning and ethical reasoning. This insight is crucial for fostering empathy, civic responsibility, and a sense of global citizenship.

8.3 Designing surveys

Effective sustainability surveys go beyond factual recall. They can include **reflective, affective, and action-oriented items** that stimulate metacognition and social awareness (Taylor & Cranton, 2012; Waltner et al., 2019, 2022). Surveys can be embedded in real-world learning scenarios, such as local sustainability projects or intercultural exchanges. Educators can use survey results to guide feedback, facilitate peer learning, and co-create learning pathways with learners. Moreover, longitudinal surveys can track shifts in learners' sustainability mindsets over time, offering valuable data for curriculum development.

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8.4 Example of a survey

Inspired by **transformative and participatory pedagogies** (Taylor & Cranton, 2012), here are examples of survey items that support sustainability learning, particularly in the social domain:

1 Awareness and understanding

Which GreenComp competences do you feel most connected to, and why?

How would you define “sustainability” in your own words?

What social issues in your community relate to sustainability?

2 Values and attitudes

To what extent do you agree: “Achieving sustainability benefits everyone.”

How important is sustainability to you personally?

What emotions do you associate with sustainability?

3 Action and agency

What actions have you taken (or do you plan to take) to support social development goals?

What barriers do you face in contributing to social sustainability?

Who inspires you to act on social justice issues, and why?

These questions can be adapted for different age groups and learning contexts. They encourage learners to **reflect on their role in society**, **recognize systemic challenges**, and **commit to taking meaningful action**. Educators can use responses to initiate discussions, design collaborative projects, or develop personalized learning goals.

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9 Observations

9.1 Using observations

Observation is a powerful pedagogical tool in sustainability education, especially when aiming to cultivate learners' awareness of social dynamics and sustainability challenges. Unlike standardized assessments, observation allows educators to capture nuanced behaviors, interactions, and attitudes that reflect learners' engagement. Grounded in **experiential and constructivist learning theories**, observation supports contextualized learning and helps educators adapt instruction to diverse learner needs (Daniels et al., 2013; Rieckmann, 2017)

9.2 Purpose of observations

The primary purpose of observation in sustainability education is to **assess learners' development holistically,** including cognitive, emotional, and behavioral dimensions. Observational data can reveal how learners collaborate, express empathy, engage in problem-solving, and respond to ethical dilemmas. Observation also supports **transformative learning**, helping learners reflect on their assumptions and develop critical consciousness (Dagli et al., 2025; Daniels et al., 2013; Taylor & Cranton, 2012).

9.3 Designing observational strategies

Effective observation requires intentional design. Educators should define clear indicators aligned with sustainability competences—such as collaboration, ethical reasoning, and civic engagement. Observations can be structured (e.g., using rubrics or checklists) or open-ended (e.g., narrative logs). Peer observation and **learning walks** are also valuable, fostering a culture of shared reflection and professional growth (Future Ready Schools (Classroom Observation and Teacher Reflection – Future Ready), 2025; Victorian Dept. of Education, 2018).

Observation should be embedded in **authentic learning contexts**, such as community projects, debates, or simulations. These settings allow learners to demonstrate sustainability-related competences in action, making observation a formative and developmental tool.

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9.4 Examples of observational focus areas

Here are examples of what educators might observe when teaching about sustainability especially in social development contexts:

1 **Social Interaction and Collaboration**

How do learners engage in group discussions on the topic of sustainability?

Do learners listen actively and respect diverse perspectives with regard to sustainability?

Are learners able to negotiate and co-create sustainable solutions?

2 **Ethical Reasoning and Empathy**

Do learners express concern for marginalized groups in the sustainability discussion?

How do they respond to scenarios involving social injustice as a consequence of unsustainable actions?

Are they able to articulate the ethical dimensions of sustainability?

3 **Civic Engagement and Agency**

Are learners motivated to take action on sustainability-related issues?

Do they show initiative in proposing community-based solutions?

How do they reflect on their role as global citizens?

Educators can use these observations to provide **personalized feedback**, guide reflective conversations, and co-design learning goals with learners. Over time, observational data can inform curriculum adjustments and support **evidence-based teaching**.

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10 Focus groups

10.1 Using focus groups

Focus groups are a dynamic and participatory method that can enrich sustainability education by fostering dialogue, critical reflection, and collaborative meaning-making. Unlike traditional classroom discussions, focus groups are structured yet flexible forums where learners explore complex social issues in depth. Rooted in **social constructivist and participatory pedagogies**, focus groups allow learners to co-construct knowledge through shared experiences and diverse perspectives (Korzenevica et al., 2025; Romm et al., 2013)

10.2 Purpose of focus groups

The primary aim of using focus groups in sustainability education is to **cultivate critical consciousness and collective inquiry**. They provide a space for learners to voice their opinions, challenge assumptions, and engage with real-world dilemmas related to sustainability. This is particularly valuable for social development, where understanding diverse lived experiences is essential. Focus groups also support **transformative learning** by encouraging learners to reflect on their values and consider alternative viewpoints during the group discussions (Dagli et al., 2025; Fien et al., 2008; Taylor & Cranton, 2012).

10.3 Designing focus groups

To maximize their impact, focus groups should be **intentionally designed** with clear objectives, inclusive facilitation, and reflective follow-up. Key considerations include:

- **Group composition**: Ensure diversity in gender, background, and perspectives to enrich discussion.
- **Facilitation**: Use trained moderators who can guide dialogue, manage group dynamics, and foster psychological safety.
- **Question design**: Focus on open-ended, exploratory questions that align with sustainability themes and encourage critical thinking.
- **Reflexivity**: Encourage participants to reflect on their own positionality and how it shapes their views.

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Focus groups can be integrated into **project-based learning**, **community engagement**, or **interdisciplinary modules**, allowing learners to explore sustainability challenges in context.

10.4 Example of focus group themes and questions

Here are sample themes and questions for focus groups centered on sustainability:

1 Understanding inequality and inclusion

What does “equality” mean to you in your community or school?

Can you share a time when you witnessed or experienced inequality?

How do different forms of inequality impact each other?

2 Exploring agency and responsibility

What role do young people play in sustainability?

How can we challenge stereotypes and promote inclusion in our daily lives?

What actions can we take to support sustainability in our school or neighborhood?

3 Reflecting on learning and change

How has your understanding of sustainability changed during this course?

What perspectives did you hear today that challenged your thinking?

What will you do differently after this discussion?

These questions promote **dialogue, empathy, and action**, aligning with the **socio-emotional and behavioral learning domains** emphasized in education for sustainable development (Rieckmann, 2017).

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11 Refining the evaluation process

Whatever the chosen method may be, it is important to **analyze the learning process and identify challenges for the learners**. This involves examining whether sustainability education is being implemented as planned, assessing the level of learner engagement, and determining if interdisciplinary connections are being made. Barriers to learning, such as lack of institutional support, limited resources, or resistance to change, should also be identified and kept in mind for future improvements.

Monitoring time invested is also important. Time investment mainly involves tracking learners' progress and mapping out their learning journey. Sharing some responsibility with learners by requiring self-evaluations or evidence submissions can help you manage this time investment.

Process-evaluation can be used (and recommended) to **enhance sustainability education continuously**. For example, if learners struggle with interdisciplinary teamwork, structured group work strategies could be introduced to improve collaboration. If real-world case studies prove more effective than traditional lectures, educators could integrate more practical, hands-on learning experiences. Sharing findings with school leadership can also help strengthen institutional support for sustainability initiatives.

To illustrate how this works in practice:

Consider a sustainability project-based learning course. If surveys reveal that learners find the course engaging but struggle with teamwork, and educator observations show that learners grasp theoretical concepts but struggle with practical applications, the educator can adjust their teaching method. Focus group discussions might highlight that real-world case studies improve understanding, while project reviews could indicate that learners need more guidance in developing concrete sustainability solutions. In response, educators could refine the curriculum by incorporating structured group work activities, increasing the use of case studies, and providing targeted coaching on sustainability problem-solving.

By conducting regular process evaluations, educators can thus ensure that sustainability education is **not just delivered but also effective**. A well-structured evaluation process allows for continuous refinement of teaching methods, improving learner engagement, and deeper learning. Ultimately, this helps institutions cultivate sustainability-minded graduates who are equipped to address the complex challenges of the future.

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