A Joint Business and Higher Education Initiative for a Greener Future

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Empowering Future Leaders with Sustainable Knowledge

SustainEdX

A Practical Guide to Facilitating Dynamic Activities with WebQuests: Strategies, Tips, and Learnings

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1. Introduction

In a global context marked by the urgent need to address environmental challenges, the SustainEd project: A Joint Initiative between Business and Higher Education for a Greener Future emerges as an innovative response to equip future generations with the necessary skills to lead the transition to a sustainable economy. This project, funded by the Erasmus+ programme, brings together partners from several European countries: Milton Friedman University (Hungary), the Fenice Foundation (Italy), StoryTellMe (Portugal), the ACTA Foundation (Bulgaria) and ETE FAROS LTD (Cyprus). Each partner brings expertise in key areas such as sustainability, interactive learning, and digital tools.

The project combines two key methodological approaches:

1. Challenge-Based Learning (WebQuests): Activities designed to guide students in exploring and solving real problems using structured digital resources.

2. Experiential Learning (Living Labs): Hands-on learning spaces that promote experimentation and collaboration with real-world actors, such as businesses and local communities.

The main objective of SustainEd is to close skills gaps related to sustainability and the circular economy, enabling university students to acquire key competencies to effectively participate in the green transition. To this end, the project develops innovative educational tools, such as the **SustainEdX Toolkit**, which includes 24 WebQuests designed to address critical topics such as sustainability and ESG reporting, sustainable supply chains, green finance, and circular economy business models.

Through collaboration between universities, companies and other social actors, SustainEd seeks to foster structural change in higher education, promoting the integration of sustainability into curricula and creating real opportunities for applicable learning. This approach not only prepares students for the challenges of the future but also contributes to the achievement of the Sustainable Development Goals (SDGs), highlighting the role of education as a key driver for change.

This guide is designed to support higher education institutions, vocational training centres and civil society organisations in implementing innovative solutions that promote sustainability and the circular economy.

Through the WebQuest (WQ) methodology, participants develop critical competencies in circular economy, sustainable supply chain management, sustainable finance, and responsible business models.

The international collaboration and pilot activities carried out within the framework of the project ensure that the results are relevant and applicable in educational and business contexts. These activities in a creation and testing phase have involved university students, teachers and key actors, such as companies and policy makers, promoting a significant impact in the educational field.

This guide offers a comprehensive overview of the design, implementation and evaluation of WQs within the framework of the SustainEd project, highlighting their role as a key tool to promote sustainability and the circular economy in higher education. It includes practical advice for facilitators, specific rubrics to assess both the quality of WQ and student learning, examples of good practice, and strategies for combining these methodologies with innovative approaches such as Living Labs. In addition, it provides detailed guidance to maximise the pedagogical impact of WQs, fostering critical, collaborative and digital competences, aligned with the Sustainable Development Goals and the European Green Agenda.

1.1. Project objectives

The **SustainEd** project aims to develop and implement a sustainable learning program that combines WQ and Living Labs. This approach fosters the green transition by empowering students with essential skills in sustainability and circular economy, aligning with the Sustainable Development Goals (SDGs) and the European Green Agenda.

Key results

1. **SustainEdX Toolkit**: An interactive platform that offers 24 WQs on topics such as circular economy, ESG and sustainability.

2. **SustainEdG Guide for Living Labs**: Tools for designing practical activities that connect theory and practice.

3. **SustainEdP: Sustainable Partnerships**: A collaborative framework for implementing Living Labs between universities, businesses, and communities.

2. The WebQuest methodology

2.1. WQ Methodology

· What is it about?

WebQuests are **inquiry-based learning** methods that employ internet resources to solve real-world problems. In 1995, San Diego State University Professor **Dr. Bernie Dodge** created the concept in response to the increased availability of web content and the need to meaningfully integrate digital resources into teaching and learning.

WebQuests are supervised, deliberate, and creative learning experiences that involve digital content. Students explore, collaborate, and build knowledge, gaining critical thinking and digital literacy.

WebQuests require students to create a written essay, group presentation, artistic performance, or digital output based on their theme exploration. Students are motivated and given perspective for their research by these projects' narrative or real-life content. Autonomy is encouraged yet structure keeps students focused and engaged.

WebQuests are powerful pedagogical tools because they:

- Encourage **active and experiential learning**;
- Foster **autonomy**, **creativity**, and **problem-solving**;
- Promote **teamwork and collaboration**;
- Provide a **scaffolded structure** for navigating online content;
- Improve **digital literacy**, especially in evaluating sources;
- Align with **constructivist learning theories**, where learners build understanding through personal engagement;
- Offer high adaptability across disciplines and educational levels.

Key elements of a WQ

WebQuests are built on particular principles:

1. Inquiry-Based Education

A central topic or subject motivates students to investigate, ask further questions, and find solutions through continuous assessment, analysis, and reflection. This model encourages independence and inquiry.

2. Constructivism

Learning is active. In context, students tie content to earlier experiences and build meaning together. An educator or facilitator guides rather than instructs.

3. Support Systems and Cooperation

WebQuests help students gain autonomy with structured guidance. Small groups work on tasks to encourage peer-to-peer learning and diverse perspectives, improving social learning dynamics.

4. Digital Inquiry

WebQuests use interactive content instead of textbooks or passive media. Students are guided to trustworthy online resources and tools.

The Six Essential Steps of a WebQuest

The WebQuest methodology follows **six main steps**, designed to guide learners through an engaging and structured learning journey. These steps help students stay focused, work together effectively, and build knowledge in a meaningful way. Originally outlined by **Bernie Dodge (1995, 1997)**, they form the foundation of every well-designed WebQuest.

1. Introduction

The Introduction presents the topic and sets the scene. It includes background information and a short explanation of the problem or theme. This step aims to **grab the learners' attention** and explain why the topic matters, often through a real-world or imaginative scenario.

2. Task Definition

This step clearly explains what learners are expected to do. The task should be interesting, realistic, and challenging enough to make students think critically and creatively. It could involve writing, designing, solving a problem, or presenting ideas in a new way.

3. Information Resources

Here, learners are given a **selection of useful and reliable materials** to help them complete the task. These resources—such as websites, videos, or articles—are carefully chosen by the teacher or facilitator. This helps learners focus their search and avoid getting lost online.

4. Process and Collaboration

The Process outlines the steps learners need to follow to complete the task. It may include dividing responsibilities, answering key questions, or working in small groups. This step provides **clear guidance** to help learners organize their work and collaborate effectively.

5. Support Tools and Tips

To make the task easier to manage, this step includes **extra help**, such as templates, diagrams, tips, or examples. These tools support learners in understanding information, making connections, and presenting their findings clearly.

6. Conclusion and Reflection

The Conclusion brings the activity to a close. It reviews what has been learned and encourages learners to **reflect on the experience**. It may also invite them to think about how they could apply their new knowledge in real life or in other subjects.

WebQuests are a comprehensive learning tool that goes beyond the six core steps, fostering teamwork and peer engagement through task assignments and group challenges. They cater to diverse educational settings and help students understand complex ideas, critical thinking, and digital skills. WebQuests should be simple, attractive, and have a defined target audience to meet learners' needs. Planning is crucial for success, including identifying challenging topics, setting learning goals, and providing age-appropriate, diverse digital materials. Individual and group reflection enhances learning and comprehension. WebQuests teach 21st-century skills through effective training and digital tools, fostering teamwork, creativity, and digital proficiency in real-world situations.

2.2. WQ complemented by other teaching methods

WebQuests (WQ) have proven to be much more than a one-off activity. Its value lies in its ability to integrate with contemporary pedagogical approaches and respond to the demands of the

current educational ecosystem. Compared to models focused on the transmission of content, WQs favour active learning, where students analyse, synthesize, and apply information in relevant contexts, thus facilitating a deeper and more meaningful understanding.

As Barreto and Santos (2012) point out, this type of proposal allows us to move towards student-centred classrooms, where digital technology is not an end, but a tool that promotes essential competencies for academic and professional life. In addition, its design favours collaboration and promotes a more democratic education (Campillo-Ferrer, 2022), by strengthening key skills such as teamwork, problem-solving or effective communication.

On the other hand, WQs offer a safe and guided environment to explore information online, favouring the development of critical thinking in the face of the avalanche of resources that circulate on the Internet. Its interactive and dynamic nature contributes to increasing motivation, which is especially relevant in generations that have grown up in digitalized environments (Strickland & Nazzal, 2005).

Its validity and validity are explained, in large part, by its versatility. WebQuests are easily adapted to emerging active methodologies (Leite, Dourado & Morgado, 2015) and to training needs in both formal and non-formal and informal contexts. Here are some ways in which they can be integrated with other methodological proposals:

Complementary methodology	How is it integrated with WebQuests?	What does it bring to teaching practice?	Key authors/references
Flipped Learning	The WQ is used as a pre-task or follow-up to face-to-face sessions.	Enhance preparation and consolidation of autonomous learning.	Leite, Dourado & Morgado (2015)
Flexible learning	Students access the WQ at their own pace, from various contexts.	Encourages inclusion and personalized learning paths.	Aslanyan-Rad (2024)
Project-Based Learning (PBL)	The WQ structure aligns with the stages of a project.	Fosters planning, research, and solving real-world problems.	Cruz & Montero (2021)
Experiential / curiosity-based learning	Open-ended questions in the WQ stimulate	Increases active engagement and	Aslanyan-Rad (2024)

Complementary methodology	How is it integrated with WebQuests?	What does it bring to teaching practice?	Key authors/references
	inquiry and simulated exploration.	autonomous discovery.	
Autonomous and evidence-based learning	Students must search and validate information to support their responses.	Develops critical thinking and academic rigor.	—
Problem-Based Learning (PBL)	The WQ presents a real or complex situation to be solved.	Boosts creativity, analysis, and problem-solving skills.	Leite, Dourado & Morgado (2015)
Game-Based Learning (GBL)	The narrative and structure of the WQ can be gamified.	Increases motivation and engagement in learning.	Barreto & Santos (2012)
Participatory Action Research	The WQ can support research into real community issues.	Encourages critical reflection and social transformation.	Hofstein, Eilks & Bybee (2011)
Collaborative learning	Tasks are designed to be carried out in groups.	Strengthens social skills and collective knowledge-building.	Cruz & Montero (2021)
Scaffolding	The step-by-step WQ structure provides guidance and support.	Offers clarity and structure throughout the learning process.	Zheng et al. (2005)

2.2.1 Pedagogical advantages in the current context

In an educational world where autonomy, collaboration and critical thinking are increasingly valued, WebQuests (WQs) emerge as a tool with great potential... if they are designed with intention. Here are some of its most prominent advantages, supported by research by authors such as Zheng et al. (2005), Moeller & McNulty (2006), Hofstein et al. (2011), Chinyere & Njoku (2023), Aslanyan-Rad (2024) y Martínez-Borreguero et al. (2020):

- **Structured and validated inquiry:** WQs provide a staged structure for students to investigate and analyse problems related, in this case to sustainability, using pre-selected resources. The prior selection and dosage of the content by the teaching staff facilitates a

greater understanding of complex concepts. The highly structured nature of WQs guides students through the search, analysis, and synthesis of information, reducing frustration and maximizing focus on specific objectives.

- **Encouraging critical thinking and problem-solving**: WQs motivate students to reflect, analyse, and synthesize information to solve real-world problems and develop critical skills.

- **Facilitation of autonomous learning**: They provide a structured environment that helps students manage their own learning, developing key skills such as self-regulation

- **Technology integration**: Promote the meaningful use of digital tools, which prepare students for digital educational and work environments.

- **Adaptability to multiple methodologies**: WQs can be combined with approaches such as flipped learning, project-based learning, and experiential learning, making them a versatile tool for different educational contexts.

- **Collaboration and social learning**: Its group approach fosters communication and teamwork skills, essential in today's world.

- **Motivate students:** Improves interest and commitment in educational activities.

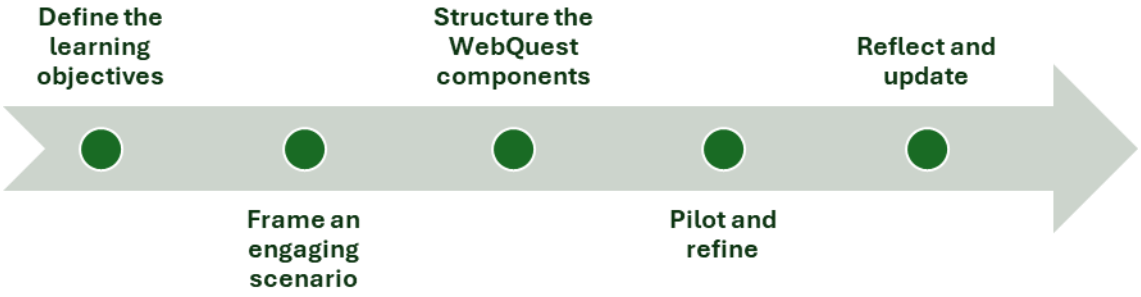
- **Knowledge transfer and application**: Students not only acquire information, but also learn to apply it in new contexts, fostering meaningful and lasting learning.

Overall, the WebQuest teaching strategy is often praised as a research-oriented activity that effectively integrates technology into teaching and learning. However, research results suggest that while this strategy may have a positive impact on students' collaborative work skills and attitudes, if it is not planned in a meaningful way for students, it has little direct impact or advantage in increasing student achievement compared to other didactic activities (Abbitt & Ophus, 2008).

3. Design your own WebQuests

3.1. How to create your own WebQuest?

Creating an effective WebQuest involves thoughtful planning, clear objectives, and a learner-centred approach that promotes critical thinking and collaboration. As a teacher, facilitator, or trainer, applying these steps will help you create effective WebQuests that empower learners to explore sustainability challenges and develop relevant solutions. The following is a step-by-step process based on the SustainEdX Toolkit.



Step 1: Define the learning objectives of the WebQuest.

The first step is to identify the skills and competencies you want learners to acquire. Align your objectives with sustainability issues, such as circular economy, ESG reporting, green finance, or sustainable supply chains. Ensure that the objectives you set are SMART, i.e. **S**pecific, **M**easurable, **A**chievable, **R**elevant, and **T**ime-bound.

Example: "By the end of this WebQuest, learners will be able to critically analyse the impact of gender equality on sustainable development goals (SDGs)."

Step 2: Create an engaging scenario.

The scenario is the core of your WebQuest; it is the one that will engage or not the learners. A well-formed scenario should do more than inform; it should engage, stimulate thought, and inspire the need for exploration and action. You may think of it as a narrative means that tempts the curiosity and emotional involvement of the learners. Ideally, that scenario would establish real, emotional, motivational context in which learners explore and make decisions. Most

probably, the best scenarios reflect real challenges and dilemmas, giving learners an objective and urgency about finding solutions.

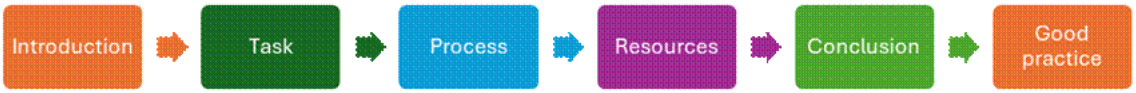
For example, you can create a scenario related to a pressing sustainability issue, such as economic growth with environmental aspects in urbanized places or the role of gender equality in achieving the Sustainable Development Goals (SDGs) that requires quick thinking. This not only makes the task relevant but also enables learners to think of themselves as real drivers of change.

Tip: Use storytelling techniques to create an appealing and interesting scenario. Use characters, such as a young sustainability manager or a local entrepreneur, who face challenges similar to those students will face in their future careers. Include dialogues, news headlines, or multimedia (videos, images) to set the scene in a realistic way.

Step 3: Structure the WebQuest components.

A successful WebQuest follows a straightforward structure that guides learners and stimulates their curiosity, creativity, and collaboration.

A well-designed WebQuest includes the following sections:



Introduction: *Set the scene.*

This is where you capture your students' attention and shape the importance of the challenge. Use the introduction to place the topic in the context of real sustainability issues that correspond to students' interests, experiences, or future careers. Your goal is to be motivating. Be brief yet impactful. Use current events, relevant examples, or personal stories. Connect the topic to their daily lives or ambitions and spark curiosity about how their contribution can be a driver of change.

For example, if your WebQuest focuses on sustainable supply chains in fashion, start with notable facts about the environmental impacts of fast fashion, highlight consumer trends, and explain the importance of sustainability in restructuring the industry.

Task: *Clearly define the mission.*

The Task section outlines what you want learners to accomplish. Make sure that your instructions are understandable, engaging, and achievable. The task should be meaningful and enjoyable for them, with a tangible outcome by the end.

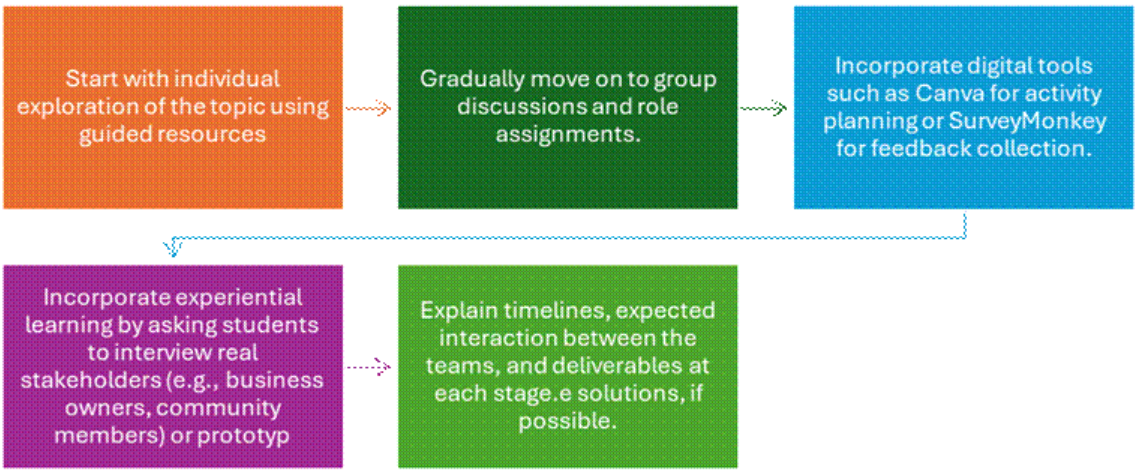
Assign tasks like:

If your WebQuest involves role-playing, here is where you will specify the roles and responsibilities performed by them (e.g., researcher, data analyst, designer, etc.). This enhances collaborative teamwork and shared accountability.

Tip: To improve learning relevance, make sure the output is realistic and understandable and relate it to real-world activities.

Process: *Guide the learners step-by-step*

The Process section needs to roadmap the learners from beginning to the end through the WebQuest. Break down the process into steps and identify what actions learners need to take at each step.



Tips:

- *Structure the steps in a logical and progressive structure.*
- *Encourage students to view the challenge from multiple perspectives.*
- *Focus on the collaborative roles and responsibilities.*

Resources: *Reliable and relevant material.*

It is vital that this section be well organized to allow learners to stay focused and have effective research. Choose links to quality materials such as articles, reports and studies, infographics, videos and podcasts, online platforms, tools, and databases. Your goal is to help learners use their time wisely and efficiently. Resources used should be current, stimulating, and relevant to the WebQuest objectives. Alternative presentation formats should be made available where possible.

Tips:

- *Give priority to reliable and up-to-date resources.*
- *Ensure that there is a clear link between the sources and the work.*
- *Offer multiple resources (visual, textual, and interactive) in ways that can address different learning styles.*

Conclusion: *Reflection on the WebQuest outcomes.*

Use the Conclusion section to summarise the learning experience and encourage reflection. Here you should outline the key lessons and link them to broader issues of sustainability and personal growth. Use open-ended questions to encourage reflection, such as:

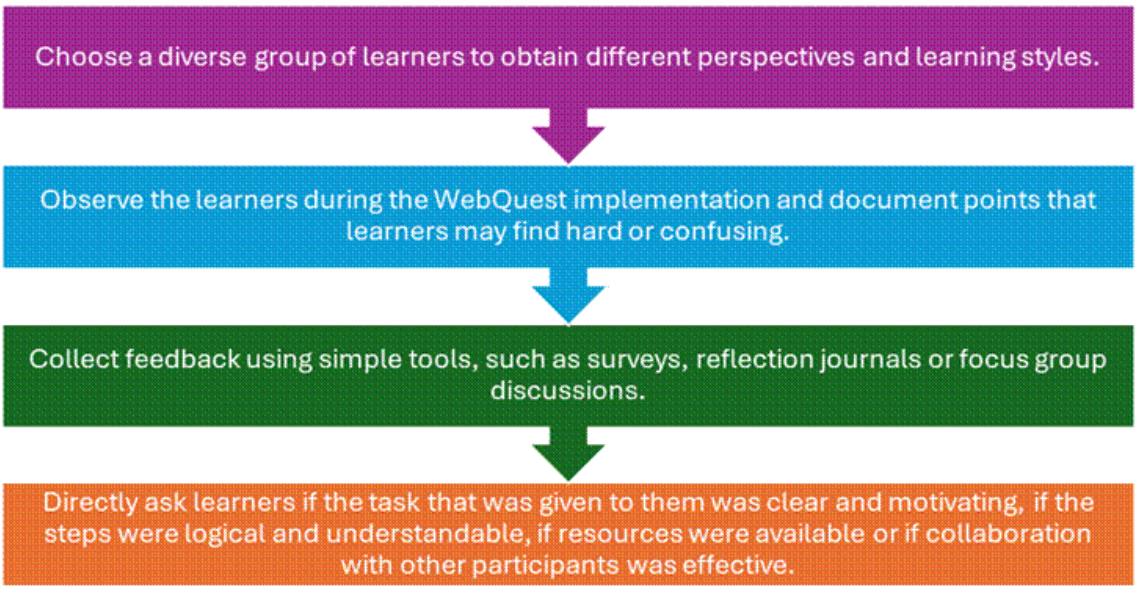
- What has struck you the most about your findings?
- In which way has this activity changed your perception about sustainability practices?
- How can you apply these lessons to real-life situations?

Good practice: *Success stories*

The Good Practice section will make your WebQuest more than just an academic exercise. It offers examples of real-life success stories, that can inspire your learners. This section is used to show to the learners how the specific WebQuest challenges are addressed in real-life, helping them to connect theory with practice. We suggest you choose examples directly related to the topic of your WebQuest. You can take examples and ideas of local community initiatives, business case studies, pilot projects under Erasmus and other EU initiatives. Focus on stories that students can relate to, for example local initiatives, youth projects or well-known campaigns.

Step 4: Pilot testing and refinement of the WebQuest.

Before launching your WebQuest, it is important to conduct a test phase with a small group of learners. The pilot phase will help you identify its strengths, weaknesses and challenges, and will allow you to refine your activity for maximum effectiveness.



After the pilot phase you will need to analyse the feedback, you will have collected to identify the parts of WebQuest that need simplification or enrichment. Adjust the complexity of the WebQuest, i.e. if learners found it too easy, deepen the exploration; if learners found it too difficult, consider adding guiding hints or other support.

Step 5: Reflect and update.

Delivering the WebQuest should not be the final step; continuous improvement is key to keeping your activity effective and relevant over time, especially in the dynamic field of sustainability. Maintain a simple improvement log after each delivery cycle. Record observations, learner quotes, and ideas for enhancement. This living document becomes invaluable for future iterations.

What to Reflect On:

1. **Learner engagement:** Which parts of the WebQuest generated enthusiasm? Where did attention wane?

2. **Achievement of learning outcomes**: Did participants demonstrate the intended knowledge and skills?

3. **Resource relevance:** Are all materials still current and accessible? Do they represent diverse, inclusive perspectives?

4. **Facilitation experience:** What worked well in managing the flow and supporting learners? Were there bottlenecks in coordination or communication?

3.2. What to do?

1. **Define Clear Learning Objectives**

   Align the WebQuest with specific, measurable learning outcomes that reflect higher-order thinking skills (e.g., analysis, synthesis, evaluation) as outlined in Bloom's Taxonomy (Anderson and Krathwohl, 2001). Ensure the objectives are relevant to the course and challenge students intellectually.

   Example: Instead of asking students to "list facts," require them to "evaluate the impact of a historical event using primary sources."

2. **Structure the WebQuest Effectively**

   Follow the standard WebQuest structure: Introduction, Task, Process, Resources, Evaluation, and Conclusion (Dodge, 1995). Provide a compelling narrative in the Introduction to hook students, a clear Task that outlines the end product, and a step-by-step Process to guide their inquiry.

   Tip: Use scaffolding in the Process section to support students while allowing autonomy (March 2003).

3. **Select High-Quality, Diverse Resources**

   Curate credible, authoritative online resources (e.g., academic journals, reputable websites, primary sources) that expose students to multiple perspectives. Ensure resources are accessible and inclusive, considering students with diverse needs (Yoder, 1999).

   Tip: Include a mix of text, multimedia, and interactive tools to cater to different learning styles.

4. **Design Authentic, Engaging Tasks**

   Create tasks that mirror real-world problems or professional scenarios relevant to the discipline. For example, in a business course, students might develop a marketing plan based on market research (Dodge, 2001). Encourage collaborative roles (e.g., researcher, analyst, presenter) to promote teamwork.

   Tip: Incorporate open-ended questions to stimulate debate and critical thinking.

5. **Incorporate Clear Evaluation Criteria**

   Provide a detailed rubric that aligns with the learning objectives and task requirements. Specify criteria for content, collaboration, creativity, and presentation (March, 2003). Share the rubric upfront to guide student efforts.

   Example: Include points for evidence-based arguments, clarity of presentation, and effective use of sources.

6. **Encourage Reflection and Synthesis**

   Include a Conclusion section that prompts students to reflect on their learning process and connect findings to broader concepts. This fosters metacognition and deepens understanding (Yoder, 1999).

   Tip: Ask students to write a reflective essay or participate in a debriefing discussion.

7. **Test and Revise the WebQuest**

   Pilot the WebQuest with a small group to identify technical issues, unclear instructions, or resource gaps. Gather feedback from students and colleagues to refine the design (Dodge, 2001).

   Tip: Ensure the WebQuest is user-friendly across devices and platforms.

3.3. What not to do?

1. **Avoid Vague or Overly Broad Tasks**

   Do not assign tasks that lack focus or are too ambitious for the allotted time. Vague tasks can overwhelm students and lead to superficial learning (March, 2003).

   Example: Instead of "research climate change," specify "analyse the economic impacts of climate change mitigation strategies in two countries."

2. **Do Not Rely on Low-Quality or Outdated Resources**

   Avoid linking to unreliable websites, broken links, or outdated materials. This undermines credibility and frustrates students (Yoder, 1999).

   Tip: Regularly check links and update resources to maintain relevance.

3. **Do Not Overload Students with Information**

   Curate a manageable number of resources to prevent cognitive overload. Providing too many links can distract students from the task (Dodge, 2001).

   Tip: Limit resources to 5–10 high-quality sources for a focused inquiry.

4. **Avoid Neglecting Accessibility**

   Do not assume all students can access resources or navigate the WebQuest easily. Ensure compatibility with assistive technologies and provide alternative formats for multimedia content (March 2003).

   Example: Include captions for videos and alt-text for images.

5. **Do Not Skip Evaluation or Feedback**

   Avoid omitting a rubric or providing only summative feedback. Without clear criteria or formative feedback, students may struggle to meet expectations (Dodge, 1995).

   Tip: Offer opportunities for peer or instructor feedback during the Process phase.

6. **Do Not Ignore Student Engagement**

   Avoid creating a WebQuest that feels like a traditional worksheet or lacks a motivating

context. Unengaging tasks can reduce student motivation and participation (Yoder, 1999).

Example: Instead of asking students to summarize articles, have them role-play as policymakers debating a solution.

7. **Do Not Assume Technical Proficiency**

   Do not assume all students are familiar with the tools or platforms used in the WebQuest. Provide tutorials or support for navigating resources and completing tasks (Dodge, 2001).

   Tip: Include a "Getting Started" section with technical guidance.

4. How to evaluate impact /learning experience

Evaluating the impact and learning outcomes of a WebQuest is crucial to understanding the effectiveness of the activity and ensuring continuous improvement. It requires a holistic approach that goes beyond content mastery to assess competencies such as critical thinking, collaboration, creativity, research skills, and digital literacy. Here, we offer a structured approach for evaluating both the learning process and its outcomes.

A core principle of the WebQuest approach is that learning should be engaging, transformative, and foster deep understanding, not just knowledge. Therefore, evaluating the impact and learning experience should go beyond measuring simple outputs and should assess the quality of the learning process, the competencies acquired, and the learner's growth in relation to sustainability challenges.

Effective evaluation focuses both on what learners produce (final outputs) and how they get engaged (processes, collaboration, critical thinking, reflection).

4.1. Rubric for evaluating

Evaluating the impact of the WebQuests requires special skills from educators because of several reasons:

- *Multidimensional:* Evaluating cognitive (knowledge), affective (attitudes), and behavioural (skills) outcomes.
- *Process-oriented:* Considering not just the final product but also the learning journey.
- *Aligned with learning objectives:* Reflecting intended competencies such as critical thinking, collaboration, problem-solving, and application of sustainability concepts.

1. Multidimensional Assessment

WebQuests aren't just about content—they assess:

- *Critical thinking* - Example methods: critical incident reflections, issue trees, root-cause analysis tasks, structured debates.
- *Collaboration* - Example methods: peer assessments, group self-evaluation forms, observation rubrics during teamwork phases

- *Creativity* - Example methods: design thinking projects, visual storytelling, multimedia presentations.
- *Research skills* - Example methods: annotated bibliographies, source evaluation reports, research portfolios.
- *Digital literacy* - Example methods: reflection journals, learning diaries, metacognitive interviews.

So, the teacher must be skilled in evaluating *multiple competencies* simultaneously.

2. Subjectivity and Interpretation

Many rubric categories (like creativity, originality, or reflection) are *qualitative* and open to interpretation. This requires educators to make nuanced judgments, avoid personal bias and provide consistent and fair grading. Measure learners' abilities to critically analyze information, assess multiple perspectives, identify patterns and causality, and propose innovative, context-sensitive solutions.

3. Alignment with Learning Objectives

To evaluate a WebQuest properly, educators need to understand and define **clear learning outcomes, e**nsure the WebQuest task aligns with standards and design or adapt rubrics to match those outcomes.

4. Higher-Order Thinking

WebQuests aim to foster skills like analysing, synthesizing and evaluating.

5. Feedback & Differentiation

Good WebQuest evaluation involves giving constructive, personalized feedback and adapting evaluation to diverse learners. This means teachers need strong **formative assessment** and **differentiation** skills. When evaluating WebQuests, a **rubric** is a great way to ensure consistency, clarity, and fairness.

4.2. Rubric for evaluating the evidence of what has been learned

This type of rubric focuses on what students actually demonstrate in their **final product**, **reflections**, or **presentations.**

To ensure transparent and systematic evaluation, rubrics should be used for both process and product assessment. Rubrics must:

- Align with the stated learning outcomes.
- Integrate sustainability competencies (systems thinking, anticipatory thinking, strategic competence, interpersonal skills, normative competence).
- Balance subjective and objective criteria.

Rubrics should be shared with learners at the beginning to guide self-monitoring and foster metacognitive awareness.

Additional Good Practices for Impact Evaluation

- ***Triangulate Evaluation:*** Combine self-assessment, peer assessment, and teacher assessment to gain a more complete view of learning. For a more holistic picture of learning, triangulate evaluation using multiple sources:
- *Self-Assessment:* students reflect on their learning processes and outcomes.
    - ***Peer Assessment****:* learners assess each other's contributions and teamwork.
    - ***Instructor Assessment****:* teachers provide professional, criteria-based evaluations.
    - ***Audience/External Stakeholder Feedback (optional)***: where applicable, external evaluators (community representatives, practitioners) provide insights on real-world relevance and communication effectiveness.

  Triangulation enhances the validity of the evaluation by incorporating multiple perspectives.
- ***Analyse Participation and Collaboration:*** Observe group dynamics, leadership, role distribution, and problem-solving processes. In WebQuest activities — especially those addressing complex sustainability challenges — the process of group collaboration is as

important as the final product. Therefore, assessing how students interact and work together is critical to understanding the overall learning experience. Key aspects to observe and evaluate include:

- ***Group Dynamics:*** Monitor how students negotiate ideas, manage conflicts, and build on each other's contributions. Healthy dynamics are characterized by mutual respect, active listening, shared decision-making, and adaptability.
- ***Leadership and Initiative:*** Identify whether leadership emerges naturally, rotates among group members, or remains centralized. Good leadership in a WebQuest context involves encouraging participation, distributing tasks fairly, fostering inclusion, and maintaining focus on the common goal.
- ***Role Distribution:*** Analyse how roles and responsibilities are assigned and carried out. Effective groups ensure that tasks are divided according to strengths, interests, or learning goals, and that all members are accountable for their contributions.
- ***Problem-Solving Processes****:* Evaluate how groups address challenges, adapt to unexpected obstacles, and innovate solutions. Look for signs of resilience, critical thinking, creativity, and a systems-thinking approach when dealing with complexity.

Assessment Tools: Group self-assessment forms, peer evaluation checklists, instructor observational notes, Collaboration quality rubrics. Structured feedback on collaboration can help students reflect on interpersonal skills essential for tackling real-world sustainability issues.

5. Practical Tips for WQ Facilitators/ Tutors

Supporting student engagement, autonomy, and sustainability-oriented learning

The success of a WebQuest (WQ) does not rely solely on its digital design or content structure - it is profoundly shaped by the human element of facilitation. A well-prepared facilitator or tutor is the cornerstone of an engaging, inclusive, and impactful learning experience, especially when dealing with complex and multidimensional topics such as sustainability, ESG, green entrepreneurship, and the circular economy.
In the context of the SustainEd project, where WebQuests are used to address real-world sustainability challenges, the role of the facilitator extends beyond instruction. It includes guiding inquiry, creating a safe and stimulating learning atmosphere, encouraging collaboration, and fostering reflection. The facilitator becomes a mediator between students and knowledge, between digital tools and critical thinking, between abstract concepts and practical action.
Drawing on the experience of Fondazione Fenice, which combines hands-on environmental education, digital innovation, and capacity building in green skills, this chapter offers practical, tested and transferable strategies for educators and trainers working in higher education, vocational education and training (VET), and lifelong learning contexts.

The tips are divided into three crucial moments of the WebQuest process:

- Before the WebQuest – Planning, preparing materials, setting expectations, and creating the right learning conditions;
- During the WebQuest – Facilitating group work, supporting digital navigation, and managing collaboration and motivation;
- After the WebQuest – Encouraging reflection, connecting learnings to personal and professional contexts, and gathering feedback for improvement.

Whether you are a university lecturer, a VET trainer, or a non-formal education facilitator, these insights are intended to support your mission to equip learners with future-oriented competencies, combining digital, collaborative, and sustainability literacy.
By approaching the WebQuest not just as a method, but as a transformative educational experience, facilitators can truly help students become active agents in the green transition and contributors to the Sustainable Development Goals (SDGs).

5.1. Before WQ

PREPARING THE GROUND FOR A MEANINGFUL EXPERIENCE

Every successful learning experience is built on solid and intentional preparation. This is especially true for WebQuests, which require not only digital and facilitation skills, but also a clear pedagogical vision centred on the learner. The role of the facilitator begins long before students access the platform: it is during the preparation phase that we lay the foundation for authentic, participatory, and action-oriented learning.

From the perspective of Fondazione Fenice, this phase is critical for activating motivation, building trust, and ensuring clarity of purpose. Below are the key areas to consider before launching a WebQuest.

CREATE A CLEAR AND MOTIVATING CONTEXT

Before introducing the platform or the task, it's essential to contextualize the activity. Learners need to understand the "why": Why does this topic matter? How does it relate to their future, society, or the planet? A strong introduction—possibly connected to real-world examples, current events, or personal experiences—can spark curiosity and interest.

At this stage, the facilitator's role is to set an open and inviting tone, emphasizing that this is not a test, but an opportunity to explore, co-create knowledge, and make a difference. It's important to state clearly that making mistakes and asking questions are integral to the learning process, and that everyone's contribution is valued. This fosters a psychologically safe learning space, where students feel empowered to engage.

PREPARE THE TOOLS AND CONDITIONS FOR LEARNING

Even the best-designed WebQuest can fail if the technical infrastructure is not in place or the environment is not conducive to learning. Before the activity begins:

- Ensure that all digital tools and platforms are accessible and working properly (devices, internet connection, access permissions).
- Provide a brief orientation or tutorial if students are unfamiliar with tools like collaborative documents, Padlet, Miro, or Canva.
- Test all links and multimedia content to avoid frustration and ensure a smooth experience.

In mixed-ability groups, it's helpful to offer alternative formats or support materials—such as simplified guides, video/audio instructions, or glossaries of key terms.

CLARIFY OBJECTIVES AND EXPECTATIONS

One of the most common challenges in participatory learning is lack of clarity. Before starting the WebQuest, facilitators should:

- Clearly explain the overall structure: phases, tasks, group roles, timeline, and expected outcomes.
- Share the assessment rubric in advance so that students know how their work will be evaluated.
- Discuss group dynamics and collaboration: will roles be assigned or self-selected? What are the expectations for teamwork?

This upfront transparency fosters learner autonomy, accountability, and confidence.

BUILD THE GROUP DYNAMIC

Take time to establish group connection before diving into the WebQuest. Even in university or professional contexts, students may not know each other well or have experience working in teams. Simple "icebreaker" activities or short team-building exercises can greatly improve group cohesion and collaboration later on.

If students will work in teams, facilitators should consider group composition carefully, balancing different strengths, backgrounds, and working styles to promote diversity and inclusion.

CO-CREATE A LEARNING CONTRACT (OPTIONAL BUT RECOMMENDED)

In longer or more complex WebQuests, consider proposing a simple, informal learning agreement or "contract" with the group. This can cover:

- Shared values (respect, listening, mutual support)
- Collaboration rules (e.g., how decisions are made, how tasks are divided)
- Group commitments (e.g., being present, staying engaged, helping each other)

While not a formal document, this contract can strengthen ownership and group culture, reinforcing a collaborative and respectful learning environment.

In short, the work that takes place before the WebQuest is much more than organizational prep—it's the space where we plant the seeds of motivation, establish the learning climate, and shape the group energy that will carry the activity forward.
A thoughtful facilitator is like a knowledge gardener: preparing the soil, choosing the right seeds, and creating the conditions for growth. What blossoms later in the WebQuest is rooted in what happens before it begins.

5.2. During WQ

GUIDING ENGAGEMENT, COLLABORATION, AND LEARNING IN ACTION

Once the WebQuest begins, the facilitator shifts from preparing the conditions to actively accompanying the learning process. This stage is rich with possibilities—but also requires careful observation, flexibility, and timely support. The WebQuest structure may be well designed, but its real pedagogical impact depends on how it is experienced by the learners.
Facilitators become, in this phase, a mix of coach, guide, motivator, and mediator. The goal is to encourage students' autonomy while offering guidance when needed, helping teams stay focused, supporting inclusive participation, and creating space for meaningful learning to emerge.

MONITOR AND SUPPORT GROUP DYNAMICS

As soon as the activity starts, facilitators should pay close attention to how groups organize themselves, share responsibilities, and interact. While many students thrive in self-directed contexts, others may feel lost or unsure.

Some strategies that have proven effective include:

- Checking in regularly with each group or team, offering brief prompts or reflective questions (e.g. "What's your working strategy? Who's doing what? What's the next step?")
- Helping redistributes roles or tasks when imbalances appear, or when certain voices dominate.
- Reminding students to value different perspectives, especially when discussing sustainability topics with no single "right" answer.

Inclusion is key: facilitators should actively encourage participation from quieter members, making sure all students feel their contribution matters.

PROVIDE TIMELY AND TARGETED FEEDBACK

While WebQuests encourage autonomy, structured feedback loops make a major difference in keeping learners on track. Facilitators can:

- Offer formative feedback during milestones (e.g. after initial research, before final presentation).
- Encourage peer-to-peer feedback, creating quick moments of exchange between teams to share strategies or insights.
- Use questioning techniques that promote deeper thinking (e.g. “What assumptions are you making?”, “Is there another stakeholder you haven’t considered?”).

Feedback should not only address content, but also collaboration, problem-solving, and process awareness.

- **ENCOURAGE CRITICAL THINKING AND REAL-WORLD APPLICATION**

  WebQuests work best when learners move beyond “finding the right answer” and instead engage in critical interpretation, synthesis, and decision-making. The facilitator plays an essential role in:

- Challenging superficial responses and pushing for evidence-based reasoning.
- Connecting ideas to real-life challenges, professional contexts, or local sustainability initiatives.
- Highlighting contradictions, ethical dimensions, or trade-offs related to the topic being explored.

MAINTAIN MOTIVATION AND MOMENTUM

Digital learning environments, especially when self-guided, require a degree of energy management. To maintain engagement:

- Use mini check-ins (even informal or humorous) to re-energize.
- Celebrate progress: recognizing effort and creativity builds a sense of achievement.
- Offer small surprises—like bonus challenges or inspirational content—that connect back to the WebQuest topic.

Facilitators should also be mindful of fatigue or overload, especially in long sessions, and adjust the pace accordingly.

SUPPORT DIGITAL NAVIGATION AND RESOURCE USE

Not all students are equally skilled in navigating digital content critically. Facilitators should help learners:

- Evaluate sources: Are they credible? Current? Biased?
- Manage complexity: How to prioritize key information?
- Use tools effectively: From collaborative documents to mind-mapping apps.

If a team is stuck or overwhelmed, it's helpful to suggest a strategy such as "divide and conquer" or "tag and summarize", encouraging efficient and shared knowledge construction.

Ultimately, the facilitator is the engine of engagement during the WebQuest. They provide the balance between structure and freedom, between challenge and support. When done well, facilitation creates the conditions where learners become protagonists, co-creators of knowledge, and agents of sustainability-oriented change.

5.3. After WQ

CONSOLIDATING LEARNING, FOSTERING REFLECTION, AND EXTENDING IMPACT

Concluding a WebQuest is not simply about finishing the final task or turning in an assignment. It is a critical moment of synthesis, where students are invited to pause, make sense of their learning, and consider how what they've discovered connects to broader ideas, future challenges, and their own development.

For facilitators, this phase is a chance to consolidate results, but also to plant the seeds of long-term impact. What students carry with them beyond the activity—insights, skills, confidence—depends largely on the quality of reflection and closure.

MAKE TIME FOR DEEP AND MEANINGFUL REFLECTION

All too often, learning experiences conclude in haste, with little time left for integration. Yet, pedagogical research consistently shows that learning is consolidated through reflection. Facilitators should intentionally create a space—physical or digital—where learners can step back from the task and engage in thoughtful dialogue. This moment should be structured and safe, allowing students to explore questions such as:

- What did I learn—not just about the topic, but about how I learn?
- What moments stood out for me? What challenged me most?
- What would I do differently if I repeated this experience?

Group debriefs, reflective journals, visual storytelling, or roundtable discussions can all serve this purpose. What matters is that students are given permission to think and feel out loud, supported by a facilitator who listens more than instructs.

HELP LEARNERS CONNECT TO REAL-WORLD RELEVANCE

One of the most powerful outcomes of a WebQuest is that it mirrors real-world complexity. As such, it's vital that students are encouraged to transfer their learning beyond the virtual or classroom space.

This can be done by:

- Asking students to re-contextualize their findings: "How could this project work in your home city, your workplace, or your field of study?"
- Inviting them to imagine follow-up actions: "If you had more time, what would be your next step?"
- Creating a moment of public sharing, such as a gallery walk, online showcase, or pitching session, possibly with invited guests (e.g. university staff, community actors, entrepreneurs)

When students sense that their work has visibility and value, their motivation and engagement increase—along with their belief in their capacity to act on complex issues like sustainability, climate, or circular economy.

CELEBRATE EFFORT, CREATIVITY AND PERSONAL GROWTH

Learning is not only about outcomes; it is also about effort, progress, and courage. After the WebQuest, it is essential to take time to celebrate what students have accomplished, in both visible and invisible ways.

Facilitators can:

- Recognize specific contributions from each student or team member

- Highlight growth areas: collaboration, digital navigation, critical inquiry
- Invite peers to offer praise or appreciation to each other
- Use informal ceremonies, certificates, or team storytelling to mark the moment

This closing celebration should avoid competitiveness or excessive formality. Instead, it should focus on authenticity, helping learners feel seen, valued, and empowered.

GATHER FEEDBACK AND REFLECT AS A FACILITATOR

Finally, the end of a WebQuest is also a moment for the facilitator's own learning. Every group is different; every process brings new challenges and insights. Taking time to gather feedback helps improve future implementation and strengthens your own reflective practice.

Feedback can be collected in various ways:

- Short surveys with open-ended questions
- A "stop-start-continue" exercise: What should we stop, start, or keep doing?
- Audio or video testimonials from students
- A simple anonymous form with one key question: "What stayed with you from this experience?"

This feedback should be valued not only as evaluation, but as a dialogue—an expression of trust and shared responsibility in shaping the learning experience.

Ending a WebQuest with care and intention reinforces the sense that learning is a journey, not a task to be ticked off. It allows students to leave the experience with greater awareness, agency, and readiness to engage with the complex realities of today's world. For the facilitator, it is the moment to step back, acknowledge the transformation that has taken place, and trust that the impact will continue to unfold—long after the activity has ended.

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