



PEDAGOGICAL GUIDE

INNOGREEN



Erasmus+



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Introduction



Introduction

Project description

This pedagogical guide, which is part of the InnoGreen project, has the aim of increasing the competences of trainers in the principles and good practices of implementing Innovative green practices Trainers, in turn, will empower entrepreneurs to take better environmental decisions, to understand the advantages of green actions, thus contributing to the “greenification” of the economy. With proper knowledge, entrepreneurs will be motivated to identify opportunities related to the green economy and implement successful green and sustainable practices, using an innovation business canvas.

The project also provides other outputs such as a **Good practice guide**, a **Green Business Innovation Canvas** and an **E-learning platform**.

Aim of the Pedagogical Guidelines

These guidelines focus on fostering creative and innovative skills. It describes practical pedagogical methods and techniques to develop creative thinking through which adult educators can efficiently train entrepreneurs to be more creative. It also includes suggestions for exercises that are great examples to be applied by future entrepreneurs, to promote their creativity process when thinking about new and innovative ways to implement green practices in their businesses.

Guideline Structure

After this introduction, a methodology section, a description of pedagogical approaches and a description of creative thinking approaches follows. The document concludes with a discussion on how to combine the pedagogical approaches and the creative thinking approaches into exercises, and a link to the exercises provided on the e-learning platform. Suggestions for further reading are then provided.

Methodology

Methodology

Before approaching the creative thinking techniques, it is first relevant to discuss the pedagogical approaches.

Pedagogical approaches

Considering that the objective of the project is to increase the competences of trainers in the principles and good practices of implementing innovation in the green economy, the following pedagogical approaches are identified. These are suitable for implementation, case studies, problem solving and project-based learning.

Case Studies

The Case Study method is highly valued in the training context, as it is an excellent way to link theory to practice. Through this method, trainees are presented with real or simulated situations that require analysis, reflection and decision-making. This method is particularly effective in developing analytical, critical and strategic thinking skills.

By using real or adapted cases, it is possible to make it easier for trainees to better understand theoretical concepts and how they are applied in practice. This not only increases knowledge retention, but it also prepares trainees to better deal with complex challenges in their professional future. In addition, when the methodology involves a group discussion, trainees develop communication and collaboration skills by discussing different approaches to solving a case.

Examples of case studies exercises are not provided in this document since they are available in the good practice guide of the InnoGreen project, but case studies may be viewed in an unstructured way, with the advantages already described, or they may also be presented and followed with a reflection on what emerged, for instance, using SCAMPER or 5W1H (see the section on creative thinking section). Exercises with case studies are also available at the end of this document (see page 14).

Problem Solving

Problem Solving is a methodology that encourages trainees to think autonomously and creatively. This method involves not only training in problem identification, but also the formulation of viable solutions, promoting more active and meaningful learning. It is particularly effective in situations that require the practical application of diverse knowledge/skills and concepts (from different sources and of different natures), in which the mobilization of these diverse skills is applied and directed towards a common goal, the resolution of a certain complex problem.

Thus, when faced with problems that need solving, trainees not only apply their pre-acquired knowledge, but they also develop new strategic skills. This method encourages the development of critical thinking and resilience, as trainees test and adapt their solutions to

problems. In addition, the satisfaction of solving a problem may significantly increase motivation and self-confidence.

This is an example of a problem-solving exercise:

Description:

Reducing the Environmental Impact of Packaging - In a world increasingly aware of environmental impacts, companies face the challenge of reducing their ecological footprint. In this exercise, trainees work in groups to identify innovative solutions to reduce the use of non-recyclable materials in packaging.

Problem:

The company ‘...’ has been criticised for using packaging materials that are not biodegradable or recyclable. As sustainability consultants, the trainees are asked to propose viable alternatives that are environmentally friendly, economically viable and logistically applicable.

Steps:

1. Identify the problem: Discuss and clearly define the current packaging problem.
2. Research: Investigate sustainable material alternatives already used on the market.
3. Brainstorming: Generate a list of potential solutions. (You can use SCAMPER and 5W1H, see the Creative thinking section)
4. Evaluation: Analyse each potential solution in terms of its environmental impact, cost, and feasibility of implementation.
5. Solution: Choose the best solution and develop an implementation plan.
6. Presentation: Each person /group will present its solution and implementation plan to the stakeholders (or to the other trainees).

Project-based Learning

Project-based Learning is a pedagogical approach that allows trainees to explore complex topics in an integrated way. This method is often based on experiential and collaborative learning, where trainees plan, execute and evaluate a project over a period. It is ideal for integrating different areas of knowledge and developing transversal skills.

Project-based Learning doesn't necessarily have to be carried out in a group/team, but if a group strategy is adopted, the results tend to be richer.

This method promotes the autonomy of the trainees, as they manage a large part of the project's development, from conception to completion. Project work also fosters time management, research, and decision-making skills. Team collaboration is another strong point (if chosen), allowing trainees to learn from each other and to develop social and leadership skills. Finally, the presentation of projects allows trainees to practice communicating their ideas and results effectively.

This is an example of a Project-based Learning Exercise:

Description:

Sustainable Urban Gardens Project - This project involves the design, planning and implementation of an urban garden that utilizes sustainable practices. The aim is to create a model that may be replicated in other urban areas to promote sustainability and to provide access to fresh produce.

Context:

Trainees can work in teams to develop an urban garden in a designated area of the city. This project will not only help provide fresh local produce, but it will also serve as an example of sustainable agricultural practices in urban environments.

Steps:

1. Research: Study different methods of urban agriculture and sustainable practices.
2. Design: Plan the layout of the garden, selecting plants suitable for the local climate and the space available.
3. Partnerships: Establish partnerships with local organizations for support and resources.
4. Implementation: Build the garden, using recycled materials where possible and water conservation techniques.
5. Monitoring and Maintenance: Develop a monitoring and maintenance plan for the garden.
6. Evaluation: Assess the success of the project based on predetermined criteria, such as food production, community involvement and sustainability.
7. Final Report: Prepare a detailed report on the project and present it at a conference on urban sustainability, or to stakeholders, or to the other trainees.

Creative thinking approaches

There are many creative thinking techniques that can be used to promote creativity. This pedagogical guide focusses on two of them, SCAMPER and the 5Ws and 1H.

SCAMPER

SCAMPER is an acronym for **S**ubstitute, **C**ombine, **A**dapt, **M**odify/**M**agnify, **P**ut to another use, **E**liminate, and **R**everse/**R**earrange.

It was introduced in 1971, by the American psychologist Bob Eberle in his book *SCAMPER: Games for Imagination Development*. SCAMPER is a creative thinking technique used for critical thinking and brainstorming ideas. SCAMPER can be employed in various contexts, including guiding discussions and fostering innovation. It is a straightforward approach that involves asking questions about existing products, services, or processes based on the seven prompts of the acronym.

In an entrepreneurial context, SCAMPER may lead to the development of fantastic business ideas. SCAMPER provides a framework for entrepreneurs to generate creative ideas, overcome obstacles, and innovate. By substituting, combining, adapting, modifying, putting to other uses, eliminating/minimizing, and rearranging/reversing existing elements,

entrepreneurs may enhance their products or services, address market needs, and gain a competitive advantage.

The SCAMPER Technique is a valuable tool for team-brainstorming, product development, and service improvement. Each “letter” encourages creative thinking and enable teams to develop or improve products and services effectively. Ultimately, the SCAMPER Technique empowers individuals and teams to think outside the box, solve problems, and drive innovation in business and beyond.



Fig. 1 SCAMPER model image (Rohitt Kuttapan, 2023)

Each letter in the SCAMPER technique prompts a specific question which explores possibilities for innovation. Taking into consideration whichever topic is selected, questions such as the following may be asked:

1. **Substitute:** What can be replaced or exchanged?

Bear in mind alternatives to existing components, materials, or processes. You can ask questions like:

- What can be substituted with more eco-friendly materials?
- Can we substitute traditional manufacturing processes with greener alternatives?

2. **Combine:** What elements can be merged or integrated?

Think about combining elements or ideas in new ways to create innovative solutions. Questions to ask include:

- How can we combine different products or services to reduce environmental impact?
- Are there opportunities to integrate environmental considerations into existing business processes?

3. **Adapt:** What new elements or functions can be added?

Adapt existing ideas, processes, or technologies to fit new contexts or solve different problems. Questions to consider include:

- How can we adapt existing technologies to improve energy efficiency or reduce waste?
- Are there successful environmental practices in other industries that we can adapt to our business?

4. **Modify/Magnify:** How can the product or service be changed or enhanced?

Consider making modifications or adjustments to existing elements to improve their functionality or sustainability. Questions may include:

- In what ways can we modify our packaging to reduce waste?
- How can we modify our supply chain to minimize carbon emissions?

5. **Put to another use:** Can the product be used for a different purpose or in another industry?

Explore alternative uses for existing resources, products, or technologies. Questions to ask include:

- Can we repurpose waste materials to create new products?
- How can we leverage existing infrastructure for renewable energy production?

6. **Eliminate/Minimize:** What can be removed or simplified?

Try to identify unnecessary elements or steps and eliminating them to streamline processes or reduce waste. Questions may include:

- What unnecessary packaging or materials can we eliminate from our products?
- Are there inefficient processes that we can eliminate or automate to improve efficiency and reduce resource consumption?

7. **Rearrange/Reverse:** What changes occur when the process or sequence is altered?

Dwell on the possibility of reversing the order of operations or rearranging elements to create new perspectives or opportunities. Questions to consider include:

- How can we reverse the flow of resources to create closed-loop systems and / or promote the circular economy?
- Are there opportunities to rearrange our product offerings to emphasize sustainability?

Do not limit yourself to the questions present here. You are advised to use the main idea and to explore alternatives.

5Ws & 1H

The 5W1H method is a simple but effective technique used to gather and organize information when seeking to understand or investigate a situation.

It is historically associated with journalism, that is why it can be also called the “reports questions”, because it provides reports with a guide to search for information to write a good story. Its simplicity and usefulness made it tool used in different contexts such as when conducting investigations, entrepreneurship activities, problem solving and creative thinking.



Fig. 2 5Ws and 1 H model

This method involves asking six key questions: Who, What, When, Where, Why, and How. Here is a brief overview of each:

Who: Refers to the person or people involved in the situation. Who is responsible? Who is affected?

What: Clarify what happens or can happen. Focus on the actions, events, or objects involved. What happened? What is the issue?

When: Deals with the timing or duration of the event or situation. When did it occur? When will it happen?

Where: Concerns the location or place where the event occurred. Where did it happen? Where can it be applied?

Why: Seeks to understand the reasons or motivations behind the event or action. Why did it happen?

How: Explores the method, process, or way something occurred. How did it happen?

When the 5W1H method is applied to search for positive environmental changes in business models, the following sets of questions may be addressed:

1. Who:

- Who is, or who can oversee the desired environmental changes? Determining key persons, partners or groups may guarantee responsibility and efficient execution.
- Which stakeholders are impacted by the company's environmental policies? Customers, suppliers, workers, investors, and local communities are all included in this.

2. What:

- What particular environmental problems or difficulties are pertinent to the business's activities or industry? This may involve the use of energy, the production of waste, carbon emissions, the depletion of resources, among others.
- What eco-friendly procedures or programmes can the company implement to deal with these problems? This may entail cutting packaging waste, embracing

sustainable sourcing methods, and putting energy-efficient technology into practice.

3. When:

- When do the activities of the firm have their highest resource consumption or environmental impact? Recognising time patterns can aid in efficiently allocating resources and prioritising efforts.
- When will the company start implementing eco-friendly policies or programmes? Setting deadlines and benchmarks for sustainability projects helps guarantee prompt action and advancement towards environmental objectives.

4. Where:

- Where in the value chain of the business are the environmental consequences taking place? This covers both downstream activities (such as distribution and trash disposal) and upstream activities (such as obtaining raw materials) .
- Where can the company use green practices or technology to reduce its environmental impact? This may entail investing in eco-friendly infrastructure, developing renewable energy sources, or streamlining transportation routes.

5. Why:

- What makes implementing green practices for the company important? This might be for a number of reasons, including long-term sustainability, cost savings, stakeholder expectations, brand reputation, and regulatory compliance.
- What justifies stakeholders' backing of the company's environmental initiatives? Promoting the advantages of sustainability, such as less impact on the environment, better public health, and greater brand image—may elicit support and participation.

6. How:

- How will the company put green initiatives or practices into practice? This entails describing the precise tactics, plan of action, and materials required to meet environmental objectives.
- How will the company monitor and assess its progress towards its sustainability goals? The establishment of monitoring systems and key performance indicators (KPIs) may aid in assessing the success of green efforts and pinpointing areas in need of development.

By systematically applying the 5W1H method, businesses can develop comprehensive strategies for promoting green practices in their business models, fostering sustainability, and contributing to a more environmentally friendly future.

Conclusion

Conclusion

The three pedagogical methods, when well implemented, may transform the training experience, making it more relevant, engaging, and efficient.

By using **case studies**, real-life examples of successful green businesses may be highly effective in illustrating the practical application of green practices. Analysing case studies allows trainees / entrepreneurs to understand the challenges, strategies, and outcomes of implementing green initiatives.

A **problem-solving** approach presents entrepreneurs with real-world environmental challenges and guides them through the process of finding sustainable solutions that may foster critical thinking and problem-solving skills while promoting a deeper understanding of green practices.

On **Project-Based Learning**, the presentation of projects that require entrepreneurs to develop and implement sustainable business plans or initiatives encourages hands-on learning and empowers them to apply green practices in a practical context.

These methods complement each other very well. For instance, case studies may be used to introduce a problem to be solved, or a project-based approach may use a case study as an inspiration. A problem-solving approach may also follow project-based learning to seek a solution.

The creative thinking approaches also blends very well with the previous pedagogical methods. Scamper and the 5W1H may be used to analyse the case studies, or as techniques to be used for problem solving, and / or for project-based learning. They may also be used either individually or in combination with each other. For example, **SCAMPER** may be used to identify a project, problem, or improvement opportunity, while the **5W1H method** may be used as a way of designing a method for the implementation of the action which has been decided upon.

It is relevant to take into consideration the fact that all the SCAMPER and the 5W1H approaches may vary in the type of complexity of the change that may be required. For example, the substitution of a fleet of trucks by electric vehicles is one level of change. But it may be possible to replace, at least, part of the distribution by using trains or to rethink the efficiency of the whole distribution process. In the same way, a decision to install solar panels may be taken by many companies, but a larger scale replacement of energy sources may also be considered, or the whole production method may require re-thinking. Even the product or service by itself may require a complete change. As an example, think about Netflix, which started off as a DVD rental service by regular mail, and which is now a large provider of streamed entertainment content.

The principles presented in this document, such as using case studies, problem solving, and projects as a pedagogical approach, may be implemented in many ways, including by using exercises. The next section includes examples of exercises, and trainers may also be inspired to create new ones.

Creating exercises

Here are two examples of exercises:

5Ws and 1H exercise: Case study

Think of a green and innovative idea that could be included in the business model of the following case study. Apply the 5Ws and 1H to structure this new idea.

Traditional Practice: Fast Fashion Model

In the traditional fast fashion model, clothing retailers produce large quantities of inexpensive clothing that quickly go out of style. This model relies heavily on cheap materials, high energy consumption, and it often may involve unethical labour practices. Additionally, fast fashion contributes significantly to textile waste and pollution.

What innovative idea would be suitable for this business model?

(Use the 5Ws and 1H to describe the idea)

SCAMPER exercise: Eliminating or reducing plastic use in packaging.

Use the SCAMPER method to find innovative ideas for eliminating or reducing the use of plastic in packaging.

1. **Substitute:** What materials or components can be substituted without affecting its function? Can you use biodegradable alternatives?
2. **Combine:** Can you combine materials of the packaging, or some aspects of its production, to be greener? Can you combine packaging production processes with local recycling initiatives to create closed-loop systems where packaging materials are recycled and reused locally?
3. **Adapt:** How can the packaging be adapted to serve another market or purpose? Can you adapt packaging designs to accommodate refillable or reusable options, allowing customers to refill their containers at refill stations or through mail-in refill programs? Or adapt packaging materials to suit different market segments or purposes, such as developing child-friendly packaging designs for snacks or eco-friendly packaging for luxury goods?
4. **Modify:** Is it possible to modify the packaging designs to use thinner or lightweight materials while maintaining its function? Is it possible to reduce material usage and transportation costs? How can you modify packaging production processes to incorporate energy-efficient technologies and renewable energy sources, minimizing environmental impact?
5. **Put to another use:** Can you use packaging as a platform for educational messages or sustainability pledges, encouraging consumers to act towards reducing plastic waste? Can the packaging itself have another functionality? Could the packaging be designed to serve as a planter, storage container, or another useful item?
6. **Eliminate:** Try to eliminate unnecessary packaging components such as excess plastic film or inserts, opting for minimalist designs that prioritize product protection and environmental sustainability.
Eliminate single-use plastic packaging altogether by transitioning to reusable or zero-waste packaging solutions, such as reusable containers or bulk refill systems.

7. **Reverse/Rearrange:** Think on the possibility of rearranging packaging supply chains to prioritize local sourcing of materials and manufacturing, reducing carbon emissions associated with transportation.

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