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Integrating Nature-Based Solutions into Higher Education towards exploiting the transformative potential of Social Economy for a green and inclusive future

WP4 - Development of the Green SE curriculum

Solution oriented learning activities for developing a vision and a plan to address urban challenges through feasible projects powered by NBS

Responsible partner: ZERO

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List of abbreviations:

CBL	Challenged-Based Learning
ES	Ecosystem Services
NBS	Nature-based solutions
LAs	Learning Alliances
SOL	Solutions Oriented Learning
UGI	Urban Green Infrastructure
ULLs	Urban Learning Labs

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1. Abstract & keywords

This module equips students with the tools and methodologies to address urban challenges through the creation of strategic visions and actionable plans powered by Nature-Based Solutions (NBS). By leveraging a solution-based learning (SBL) approach, the module fosters critical thinking, creativity, and problem-solving skills, enabling students to design innovative and feasible projects for sustainable urban development.

Through collaborative and hands-on activities, students will explore how NBS can utilize ecosystem services to tackle pressing urban issues such as climate adaptation, biodiversity loss, and community well-being. Emphasis is placed on identifying and addressing local urban challenges, allowing participants to develop practical solutions tailored to real-world contexts.

The module encourages a forward-thinking, strength-based mindset that prioritizes goals and solutions rather than problem analysis. By combining theoretical understanding with practical application, students gain the knowledge and skills to integrate NBS into urban planning, promoting adaptability, resilience for sustainable cities. This module builds on previously identified urban challenges, guiding students to explore type 3 NBS (urban-focused solutions) and their relevance to local realities. It provides a framework for connecting NBS to specific societal needs, fostering collaboration, and empowering learners to drive meaningful change in urban environments.

Keywords: Nature-Based Solutions (NBS), Solution-Based Learning (SBL), Urban challenges, Collaborative learning, Urban planning

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2. Introduction to the module & its objectives

This module aims to introduce the concept of Solution-Oriented Learning and how it can be applied in teaching NBS in a university context. It will make a clear distinction between SOL and Challenged-Based Learning (CBL).

Objectives:

1. Understand the concept and importance of Nature-Based Solutions (NBS) in addressing urban challenges.
2. Develop a strategic vision for sustainable urban development using NBS.
3. Formulate actionable, feasible projects that incorporate NBS to solve real-world urban issues.
4. Enhance collaboration, critical thinking, and problem-solving skills through solution-oriented activities.

3. Learning outcomes & target groups (/beneficiaries)

By the end of this module, participants will:

- Understand the principles and applications of Nature-Based Solutions (NBS) in urban contexts.
- Develop strategic visions for sustainable urban living using NBS.
- Design actionable NBS projects addressing environmental, social, and economic challenges.
- Collaborate effectively in multidisciplinary teams to create innovative solutions.
- Apply systems thinking and critical analysis to urban challenges.
- Reflect on the social, economic, and environmental impacts of NBS.

These learning outcomes will make students understand not only the theory behind NBS but also acquire field experience in the use of NBS to solve tangible urban problems.

Target group: Students undergraduate

4. Introduction to Solution-Oriented Learning

This module is all about Solution-Oriented Learning (SOL), a hands-on approach to education that helps learners build real-world skills. By focusing on critical thinking, creativity, and problem-solving, instead of just digging into problems, this approach encourages finding positive outcomes and creating practical solutions to the challenges presented. [(1)(2)]

A solution-focused mindset shifts attention from analyzing what's wrong to setting goals and figuring out how to reach them. Challenge-Based Learning (CBL) and Solutions-Oriented Learning (SOL) differ primarily in scope and approach. **CBL** starts with a broad, real-world challenge that encourages exploration, critical thinking, and collaboration to identify underlying issues and potential solutions. It emphasizes the learning process, systems-level understanding, and often results in proposals for long-term or systemic change. In contrast, **SOL** focuses on solving specific, well-defined problems with

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practical, actionable outcomes. It is more structured, outcome-driven, and often tied to applying existing knowledge or technical skills to develop immediate, tangible solutions. While both approaches foster problem-solving, CBL prioritizes discovery and inquiry, whereas SOL emphasizes efficiency and execution.

Table 1.Example of the same scenario but applying CBL and SOL

Aspect	Challenge-Based Learning (CBL)	Solutions-Oriented Learning (SOL)
Scenario	"How can we improve access to clean water globally?"	"Design a low-cost water filter for a specific rural area."
Focus	Students explore why clean water is inaccessible in different contexts (urban/rural, developing countries) and identify a focus area (e.g., filtration, infrastructure, policies).	Students are tasked with a defined problem (e.g., creating a water filter) and focus on designing and prototyping the solution.
Steps	**Engage → Investigate → Act** They research causes, collaborate with stakeholders, and propose a strategy to improve access in a specific context.	**Define → Solve → Implement** They analyze the technical requirements of the filter and focus solely on creating a functional prototype.
Outcome	Broader, systemic recommendations (e.g., a community-level clean water initiative or policy advocacy).	A specific deliverable, such as a working water filter.

As we can see in Table 1, both Challenge-Based Learning (CBL) and Solutions-Oriented Learning (SOL) involve similar steps, such as identifying a problem, conducting research, and implementing solutions. The difference lies more in how the problem is framed, the scope of the work, and the intended outcomes:

- **CBL** starts **wide** (broad challenge) and narrows down (specific action or proposal).
- **SOL** starts **narrow** (specific problem) and moves directly to a solution.

As we have seen before, Nature-Based Solutions (NBS) leverage ecosystem services (ES) to address societal challenges while preserving nature and enhancing biodiversity. By utilizing nature's inherent processes, NBS offer adaptable, resilient, and cost-effective ways to reduce environmental impacts. A growing focus is on applying NBS in urban areas (Type 3 NBS), which are the focus of this module due to their potential to tackle various urban issues. Participants can build on Urban Challenges identified through Challenge-Based Learning (module 2) to develop and implement targeted solutions using a Solutions-Oriented Learning approach.

Solutions-Oriented Learning (SOL) can be applied to Nature-Based Solutions (NBS) by focusing on solving specific environmental challenges using natural processes. For instance, students could address urban flooding by designing practical solutions like rain gardens, green roofs, or restored wetlands. Through research, they analyze local conditions, develop detailed proposals, and, if possible, test small-scale

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implementations. By evaluating the outcomes and refining their designs, students gain hands-on experience in creating sustainable, actionable solutions that balance human needs with environmental benefits.

Table 2 showcases examples of specific solutions:

Table 2.Example of specific scenarios and the respective NBS that can be explored in the context of a SOL activity

Specific Local Urban Problem	Potencial NBS to be developed in SOL context
A city with heavy vehicle traffic and high levels of particulate matter in the air, leading to significant health issues for residents	• Urban forests and tree plantations • Green roofs and walls • Urban green spaces
Industrial discharge contaminating a city's river and affecting local biodiversity	• Constructed wetlands • Riparian buffers • Wetlands restoration
Rising temperatures and frequent heat waves in a densely populated city	• Urban forests and tree plantations • Green roofs and walls • Urban parks and green spaces • Blue infrastructures like fountains and ponds
Heavy rainfall causing frequent flooding in urban streets due to poor drainage systems	• Bioswales • Permeable pavements • Rain gardens • Rainwater harvesting systems
A lack of green spaces in a residential neighborhood, reducing residents' quality of life	• Community gardens • Urban green spaces • Urban agroforestry • Green corridors
Urban rivers clogged with debris and experiencing reduced flow, leading to flood risks	• Riparian buffers • Wetlands restoration and construction
Concrete-dominated city center with minimal vegetation and high heat retention	• Green roofs and walls • Urban parks • Green spaces, blue infrastructures like ponds and fountains
Polluted stormwater runoff contaminating urban waterways	• Bioswales • Rain gardens Constructed wetlands
Overexploitation of groundwater and limited fresh water availability in an urban area	• Rainwater harvesting systems • Permeable pavements • Urban agroforestry

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Note that, contrary to CBL, in a solution-oriented activity, the students are invited and challenged to develop their own solutions to the problem. Thus, there is the need in this learning framework to create a moment for the participants to inquire about their own local and specific urban problems, in order for them to then develop a solution/prototype to tackles the diagnosed problems.

5. Case studies / good practices / real-life examples

There are real-world **case studies of solution-oriented learning activities** that focus on developing a vision and actionable plans to address urban challenges using **Nature-Based Solutions (NBS).** These projects often combine hands-on activities, community collaboration, and applied research. Below are notable examples:

Green Surge Project (Europe)

https://iclei-europe.org/projects/?c=search&uid=K62lAK4f

https://cordis.europa.eu/docs/results/603/603567/final1-green-surge-final-project-report-jan2018.pdf

Project Details:

The GREEN SURGE project was a collaborative initiative involving 24 partners from 11 countries, funded by the European Commission's Seventh Framework Programme (FP7). The project aimed to identify, develop, and test innovative strategies for linking green spaces, biodiversity, people, and the green economy to address critical urban challenges.

The GREEN SURGE project implemented several solution-oriented learning activities to enhance urban green infrastructure (UGI) planning and management:

Urban Learning Labs (ULLs): Established in five European cities— Bari (Italy), Berlin (Germany), Edinburgh (United Kingdom), Malmö (Sweden) and Ljubljana (Slovenia), ULLs served as collaborative platforms where researchers, municipal officials, and local stakeholders co-created knowledge and tested innovative UGI solutions tailored to local contexts.

Learning Alliances (LAs): Within each ULL, LAs were formed to facilitate continuous knowledge exchange among public sector representatives, private entities, and civil society. This iterative process aimed to integrate scientific research with practical experience, fostering shared learning and adaptive UGI strategies.

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To facilitate the interaction between municipalities and researchers, GREEN SURGE within each ULL, established Learning Alliances (LAs) where municipal officials and other stakeholders shared their local knowledge on urban green infrastructure (UGI) with the project's researchers. In turn, the researchers carried out locally relevant research on valuing, planning and governing urban green spaces.

Development of Educational Resources: The project produced various tools, learning modules, strategies, guidelines, and recommendations to support local and regional authorities in assessing and responding to urbanization and environmental changes. These resources were designed to promote the multifunctionality of UGI and its benefits for biodiversity and society.

GREEN SURGE produced a handbook on urban green infrastructure which offers a selection of findings and examples, compiled into policy briefs, fact sheets, guidelines, recommendations, and main messages which are all tailor-made for decision-makers such as planners, policymakers, and other practitioners.

These activities collectively aimed to bridge the gap between research and practice, ensuring that UGI planning and implementation were informed by both scientific insights and local knowledge.

Rain Gardens and Stormwater Management - University of Melbourne, Australia

Rain gardens are designed to capture and filter rainwater, preventing flooding and improving water quality. They also create attractive green spaces on campus.

The University of Melbourne has been actively involved in rain garden projects, notably through the "Remix Raingarden" initiative. This project focuses on creating rain gardens using locally sourced recycled materials to manage stormwater and enhance climate resilience. The winning concept for the Fishermans Bend Innovation Challenge, 'Remix Raingarden' was launched in April 2023. The UEDLAB collaborated with the pilot team members in the design, construction, and implementation of the raingarden prototypes, where the focus is to monitor the water quality of the runoffs of these prototypes.

Rain gardens on campus serve as both practical tools for stormwater management and case studies for engineering students.

Additionally, the City of Melbourne provides details about the "Remix Raingardens" pilot project, including its objectives and progress updates. For that information you can visit this link.

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Image 1. Remix Raingardens

AtiveLAB - Laboratórios de Ativismo Ambiental

The AtiveLAB project, a project by ZERO, created "Environmental Activism Laboratories" in Portuguese high schools, empowering students to design projects for more sustainable schools and communities.

The project followed three key stages: Acceleration Days, Application Period, and Execution.

1. **Acceleration Days:**
   During Acceleration Days, students learned about national environmental challenges (e.g., climate change, air and water pollution and biodiversity loss) and then they were presented with 25 solutions. In the afternoon, participants analyzed specific environmental and social issues within their regions and reflected on potential projects that could help to solve the problems. They followed a problem-solution-action framework, proposing concrete actions that their projects could take. They also explored activism techniques, such as creating campaigns using social media, videos, and other tools, to engage their communities with the identified problems.
2. **Application Period:**
   Students submitted detailed project proposals, including budgets and communication plans, with selected projects receiving funding.
3. **Execution:**
   From November 2024 to April 2025, the groups will develop and implement their projects in their schools with the help of professors and ongoing mentorship support.

This project demonstrates how a structured activity can empower young people to identify environmental problems and transform them into viable solutions. It is a replicable model that combines education, activism, and tangible impact, fostering local engagement and the practical application of knowledge in real-world scenarios.

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Image 2. The AtiveLAB project, a project by ZERO

Horta FCUL

The HortaFCUL project is an excellent example of solution-oriented learning activities because it focuses on identifying real-world sustainability challenges and actively implementing practical solutions within an educational setting. Here's how:

1. **Problem Identification:**
   The project starts by addressing global issues like unsustainable food systems, waste generation, and lack of awareness about sustainable agriculture. These challenges are then contextualized to the university environment, making them tangible and relevant to participants.
2. **Hands-On Solutions:**
   Participants directly engage in cultivating an eco-friendly urban garden, learning sustainable agricultural practices such as composting, organic farming, and water-efficient irrigation methods. This hands-on approach transforms theoretical knowledge into actionable skills.
3. **Collaborative Learning:**
   By involving students, faculty, and staff, the project fosters teamwork and collective problem-solving. It encourages participants to think critically about environmental challenges and co-create solutions tailored to their local context.
4. **Community Impact:**
   The initiative extends its benefits beyond the university by promoting food security, reducing

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food waste, and raising awareness through workshops and events. It demonstrates how small, localized actions can contribute to broader sustainability goals.

5. **Replicability and Adaptability:**
   HortaFCUL serves as a model for other institutions to adopt similar projects, showcasing how educational environments can integrate sustainability into their operations and curricula.

This approach embodies solution-oriented learning by linking problem analysis to actionable, impactful outcomes, equipping participants with the tools and knowledge to address real-world sustainability challenges effectively.

HortaFCUL also demonstrates how NBS can be integrated into feasible projects that address urban challenges besides inspiring participants to think strategically about leveraging natural processes and resources to create greener, more resilient cities, serving as a replicable and impactful model.

HortaFCUL applies NBS principles to provide feasible, scalable solutions like:

- Green Infrastructure: The garden transforms an unused urban space into a productive, eco-friendly area, reducing environmental impact and promoting greenery.
- Circular Economy: Composting organic waste from the campus is reintegrated into the soil, closing the loop on waste generation.
- Climate Resilience: Vegetation helps combat urban heat islands and improves air quality.

Some of the projects developed are:

HortaFCUL: An edible garden blending agriculture with horticulture, herbs, and fruit trees

Image 3. The HortaFCUL garden

PermaLab: A living laboratory, integrating permaculture research and innovation, fostering collaboration across disciplines

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Image 4. Views of Perma Lab living laboratory

Bioislands: Transforming 500 sqm of lawn into biodiverse "Bioislands" to promote sustainable urban ecosystems

Image 5. The example of bioislands

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FCULresta: A dense mini-forest in the urban center, mobilizing society towards climate action and urban biodiversity.

Image 6. The example of FCULresta forest

6. Competence-based activities & ready-to-use lesson plans

Solution-Oriented Learning is most effective when there is sufficient time to explore challenges deeply and develop meaningful solutions, such as over the course of a semester. This approach allows learners to engage in sustained inquiry, refine their ideas, and apply their knowledge in real-world contexts. The following **competence-based activities** and **ready-to-use lesson plans** are designed to align with the **Challenge-Based Learning (CBL) framework** and build upon the challenges identified in the previous chapter.

Root Causes and Nature-Based Solutions for Urban Problems	
Objectives, Competencies and Learning Outcome	**Objective:** Students will explore the root causes of urban challenges by constructing a "problem tree" diagram. They will identify interconnected causes and origins of these problems on campus and propose Nature-Based Solutions (NBS) by utilizing resources from the UNA.city website. **Learning Outcomes:** Understand the complex, interconnected causes of urban problems. Analyze how campus-specific factors contribute to these challenges. Use critical thinking to identify appropriate Nature-Based Solutions. Develop skills in collaboration, communication, and systems thinking.
NBS topic(s) – if applicable	All kind of NBS to urban problems

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Recommended age of students (specify the range of students who can take part in this activity)	Undergraduate students
Skills (21st century, green competences) that the activity promotes	- Systems Thinking - Problem-Solving - Critical Thinking - Research Skills - Collaboration and Teamwork - Communication - Creativity - Spatial Reasoning
Necessary materials/ resources **(online & offline if it is a physical ctivity)**	**Materials Needed:** ● Flipchart and colored markers for each group. ● Access to computers/tablets for UNA.city exploration. **Online resource:** https://mspguide.org/wp-content/uploads/2022/03/14msp_tools_problem_tree_14.pdf **Prior knowledge needed:** knowledge about NBS and urban problems identification
Location/Venue	**physical activity**
Duration (including the preparation and application time)	2h activity
Instructions/ How to apply the activity the /lesson plan	**Step 1: Assign Urban Challenges** - Divide the students into small groups (3–5 students per group). - Assign each group one **urban challenge** identified in the previous module, or let them select one from a list. **Step 2: Drawing the Problem Tree** **- Base of the Tree (Urban Problem)**: Each group writes their assigned urban challenge at the **base of the tree trunk** (e.g., **Heat Waves**). **- Branches (Immediate Causes)**: Students draw **branches** from the base, representing the **causes** of the problem (e.g., "Lack of Trees," "Increased Paved Areas").

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	- Secondary Branches (Origins of Causes): From each branch, students draw **secondary branches** explaining the **origins of those causes** specific to the campus (e.g., "Lack of Trees" → "Need for Parking Lots," "Insufficient Budget for Green Spaces"). **- Leaf Nodes (Deeper Origins)**: Encourage students to go deeper, drawing **smaller branches and leaves** to trace the chain of underlying causes. Example: "Need for Parking Lots" → "Increase in Students Driving" → "Limited Public Transit Options." **Step 3: Identifying Solutions Using UNA.city** - After the problem tree is complete, students explore the UNA.city website to identify **Nature-Based Solutions (NBS)** that could address the **urban problem and its causes** on campus. - Students must: Select at least **2–3 NBS** that are feasible for their campus. Document how these NBS address the identified causes and origins. **Step 4: Group Presentation** - Each group presents their problem tree and proposed NBS solutions to the class. - They should explain: The urban problem and how it manifests on campus. The causes, origins, and connections they identified. The NBS they chose, how they work, and why they are suitable for their campus.
Involved stakeholders (apart from students/ educators)	Not necessary, but you can invite scientists, urban planners, professors or others whose presence would make you feel more comfortable to carry out the activity.
Reflection moments / assessment method	Discuss as a class: - What were the most surprising origins of urban problems on campus? - How can NBS tackle both the immediate and deeper causes of these issues? - What challenges might arise when implementing these solutions?
Useful Tips	**Provide Materials:** - A printed/digital copy of the urban challenges identified in the previous module. **Introduce UNA.city Website:** - Familiarize students with UNA.city, explaining how it catalogs NBS solutions for urban challenges.

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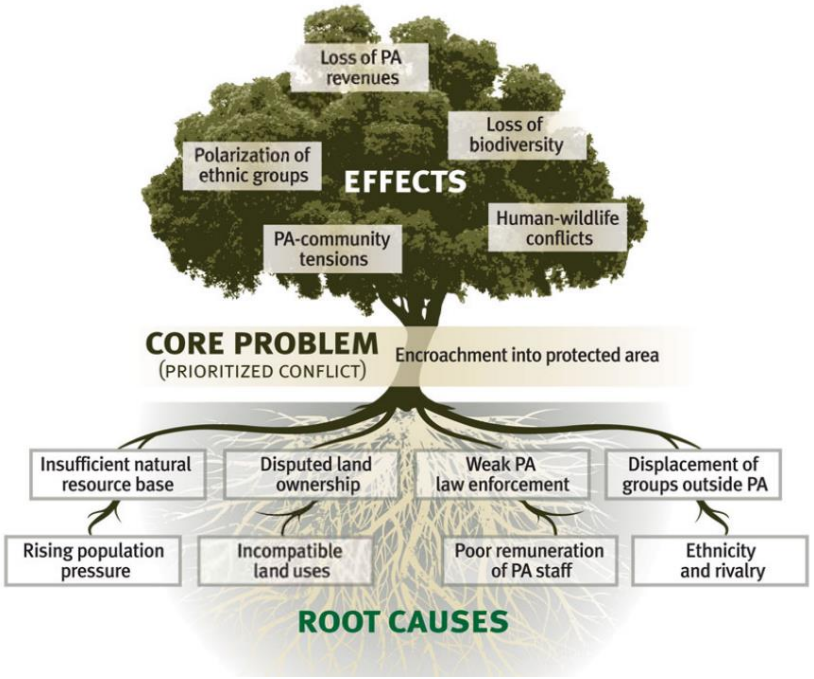
	- Prepare a brief demonstration if needed, highlighting relevant sections of the website. **<u>Examples to Share:</u>** Prepare a simplified example of a "problem tree". For example, if the urban problem identified is **"heat waves,"** one of its causes might be **"lack of trees,"** and a deeper origin of that issue on campus could be **"the need for parking lots."** Students would trace these connections by drawing a tree diagram, with the urban problem as the trunk, immediate causes as branches, and deeper origins as smaller branches. 

Grow a Green Future: Planting an Urban Forest	
Objectives, Competencies and Learning Outcome	**Objective:** To engage students in planning, planting, and maintaining an urban forest while fostering awareness of biodiversity, climate resilience, and sustainable urban planning **Learning Outcomes:**

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	Students will understand the role of urban forests in addressing environmental challenges. They will gain hands-on experience in ecological restoration and teamwork. They will learn how small local actions contribute to global sustainability goals.
NBS topic(s) – if applicable	Urban forest, planting trees
Recommended age of students (specify the range of students who can take part in this activity)	Undergraduate students
Skills (21st century, green competences) that the activity promotes	- Systems Thinking - Problem-Solving - Critical Thinking - Research Skills - Collaboration and Teamwork - Communication - Creativity - Spatial Reasoning
Necessary materials/ resources **(online & offline if it is a physical ctivity)**	**Materials Needed:** - Native tree saplings (species suitable for the local climate and ecosystem) - Shovels, gloves, buckets, and watering cans - Compost or organic fertilizer - Mulch (wood chips, straw) - Measuring tape or stakes to mark planting locations - Notebooks for observation and journaling - Map of the urban area for planning **Resources:** https://www.greenflagaward.org/media/2136/tf_handbook_2019_english_0.pdf **no prior knowledge needed**

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Location/Venue	physical activity
Duration (including the preparation and application time)	Preparation: 2 sessions (1 hour each) Planting Day: 4-5 hours Follow-up and Maintenance: Ongoing
Instructions/ How to apply the activity the /lesson plan	**Preparation Activities (Sessions 1 and 2):** **Session 1: Learning and Planning** Discuss the role of urban forests in reducing air pollution, improving biodiversity, combating heat islands, and enhancing well-being. Show examples from the handbook, emphasizing successful urban forest projects. Site Analysis Visit the chosen planting site to assess sunlight, soil type, and existing vegetation. Discuss challenges like soil compaction, lack of water, or urban infrastructure. Tree Selection Research and select native tree species that thrive in urban areas, resist pollution, and support local biodiversity. Examples: oak, maple, fruiting trees, or fast-growing nitrogen fixers. Forest Design Collaborate on a layout for the urban forest, considering spacing (2-4 meters between trees) and layers (canopy, understory, ground cover). Use the map to sketch the design and assign roles for planting day. **Session 2: Preparing the Soil** Demonstrate soil testing to check pH and fertility. Show students how to loosen compacted soil and enrich it with compost or organic matter. **Planting Day (4-5 Hours)** Welcome and Safety Briefing Ensure everyone has gloves, tools, and understands the planting process. Tree Planting Steps: Digging: Dig holes twice as wide and as deep as the sapling's root ball. Planting: Place the tree in the hole, ensuring the root collar is at ground level. Filling: Fill with soil, pressing gently to remove air pockets. Watering: Water each sapling immediately after planting.

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	Mulching: Apply mulch around the base, leaving space around the trunk to prevent rot.
Involved stakeholders (apart from students/ educators)	you can invite local specialists who can help you who would make you feel more comfortable to carry out the activity.
Reflection moments / assessment method	Have students record their observations (tree type, location, planting process) in their notebooks. Discuss how this urban forest will grow and benefit the environment over time.
Useful Tips	**Follow-Up Activities** Monitoring and Maintenance Schedule regular watering, weeding, and mulching sessions. Create a rotation among students to ensure consistent care. Data Collection Record tree growth, biodiversity (insects, birds), and soil health over time. Compare changes in local temperature or air quality if possible. Awareness Campaign Design posters or social media posts about the urban forest's benefits. Organize community tours to showcase the project.

Reviving Campus Spaces: A Student-Led Nature & Leisure Project	
Objectives, Competencies and Learning Outcome	**Objective:** To empower students to design and implement a Nature-Based Solution (NBS) that enhances biodiversity and provides a functional green space on campus, developing skills in problem-solving, teamwork, and sustainability planning. **Learning Outcomes:** Students will understand the importance of Nature-Based Solutions (NBS) in creating sustainable urban environments. They will identify and analyze underutilized spaces and propose solutions to enhance biodiversity and leisure. They will develop a feasible project proposal, including budgeting, sustainability considerations, and community impact.

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	They will gain hands-on experience in implementing and maintaining an eco-friendly space on campus. They will reflect on their project's impact and propose strategies for long-term sustainability.
NBS topic(s) – if applicable	Urban forest, planting trees, rain gardens, pond, vegetable gardens (different possibilities for a green space)
Recommended age of students (specify the range of students who can take part in this activity)	Undergraduate students
Skills (21st century, green competences) that the activity promotes	- Systems Thinking - Problem-Solving - Research Skills - Collaboration and Teamwork - Communication - Project Management - Creativity - Spatial Reasoning - Hands-On & Technical Skills
Necessary materials/ resources **(online & offline if it is a physical ctivity)**	**Materials Needed:** The materials needed will depend on the specific Nature-Based Solution (NBS) chosen by each group. Here's a general list covering various possible projects: - Measuring & Planning Tools: Tape measure, graph paper, rulers, markers - Safety Gear: Gloves, goggles, masks (for dust or chemicals) - Basic Construction Tools: Shovels, trowels, rakes, hoes, hammers, drills, screws, nails - Watering Equipment: Watering cans, hoses, buckets **some prior knowledge is better**
Location/Venue	**physical activity**

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Duration (including the preparation and application time)	Preparation: 2 phases (1 week each) Implementation Day: 4-5 hours Follow-up and Maintenance: Ongoing
Instructions/ How to apply the activity the /lesson plan	As a professor, first identify a green space on campus that is underutilized and has the potential to become a better leisure and biodiversity area. This could be a neglected lawn, an empty patch of land, or a poorly maintained garden. Then, present the challenge to students: In groups, students must propose a project that transforms this space using Nature-Based Solutions (NBS). Their proposal should include a clear design, a budget, and an implementation plan. **Phase 1: Project Planning & Proposal (1 Week, Flexible Meetings)** **Steps** Site Analysis (Day 1-2) Students will observe the site conditions (sunlight, soil, existing vegetation, accessibility) and brainstorm potential NBS solutions (e.g., urban forest, pond, green roof, vegetable garden). Research & Design (Day 3-4) The groups explore case studies and sustainability principles, sketch a site plan, propose materials, and estimate costs. They should consider maintenance needs and long-term benefits. **Students should consult an expert in NBS at least once during this phase to refine their ideas.** Final Proposal Submission (Day 6) Submit a detailed proposal including: Project vision & goals, Design plans (maps, sketches) Expected benefits (biodiversity, climate resilience, community engagement) Materials & budget breakdown, Maintenance plan **Phase 2: Implementation & Execution (1 Week)** **Steps:** Material Collection & Site Preparation (Day 1-2) School provides the material requested by the group. preparation of the site (soil preparation, structure setup, etc.). Implementation & Planting (Day 3-5) Build/install elements (e.g., pond, raised beds, pathways). Plant trees, shrubs, or garden crops.

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	Install biodiversity-friendly features (birdhouses, insect hotels, water features). **Students should consult with an expert 1-2 times during the implementation phase to ensure they feel confident in executing their plan.** Final Touches & Reflection (Day 6-7) students should ensure the space is functional and aesthetically pleasing. they should document progress with photos/videos and present the final space to peers and faculty.
Involved stakeholders (apart from students/ educators)	**Experts on NBS** should support the groups by providing guidance and technical advice. Experts should meet with each group **at least once before the proposal submission** to help refine their project ideas. Later, experts should meet **one or two times during the implementation phase** to offer advice, troubleshoot challenges, and provide feedback to help the students confidently execute their project.
Reflection moments / assessment method	Students should reflect on their project outcomes and present their work to the school community. They should share the challenges faced, the impact of their project, and recommendations for maintaining the space.
Useful Tips	

7. List of online & offline teaching material

At this section, please make **a list of any online or offline material** that are useful for piloting / applying the module in real-life setting (& in the piloting of the whole curriculum as part of our project).

Hand book: Tiny Forest Planting Method
https://mspguide.org/wp-content/uploads/2022/03/14msp_tools_problem_tree_14.pdf
https://www.greenflagaward.org/media/2136/tf_handbook_2019_english_0.pdf

8. References

Make a list with all references that you used per section for this module.

(1) https://www.inverclyde.gov.uk/education-and-learning/inverclyde-educational-psychology-service/service-priorities/service-delivery/solution-oriented-approach)
(2) https://www.edgepointlearning.com/blog/solution-based-learning/

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