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Module 7

Innovation and Green Design	
Duration:	5,5 / 6 hours
Learning objectives:	1. Apply sustainable practices in product and process innovation to reduce environmental impact across lifecycles. 2. Design and evaluate sustainable business models focusing on resource efficiency and circular economy principles. 3. Develop eco-friendly designs and conduct environmental impact assessments to enhance strategic sustainability.
Sub-Modules:	- Product Innovation: Developing new products with sustainable practices - Process Innovation: Improving business processes for sustainability - Business Model Innovation: Creating innovative and sustainable business models - Green Design: Principles of eco-design for products and services
Resources and devices:	**Books:** • Cradle to Cradle: Remaking the Way We Make Things by William McDonough & Michael Braungart • The Upcycle: Beyond Sustainability – Designing for Abundance by William McDonough & Michael Braungart

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	• EcoDesign: A Manual for Ecological Design by Ken Yeang • Designing for Sustainability: A Guide to Building Greener Digital Products and Services by Tim Frick **Websites/Articles:** • Sustainable Design Resource • GreenBiz • Eco-Design and Sustainability in Industry: A Comprehensive Guide (ResearchGate) • The Role of Green Design in Sustainability (Journal of Cleaner Production) **Case Studies:** • Case studies of companies with successful eco-design initiatives (e.g., Patagonia, Interface Flooring, IKEA's sustainability practices).
Assessment approach:	- Environmental Impact Report - Peer Review - Self-Reflection - Presentation and Pitch - Quizzes or Tests
Skills/abilities developed:	- Product innovation, design thinking, sustainability - Process innovation, efficiency improvement, sustainability - Business model innovation, strategic thinking, sustainability - Eco-design, environmental impact assessment, sustainable design

Submodule 7.1

Product Innovation: Developing new products with sustainable practices

→ **Skills:**

1. Product innovation
2. Design thinking
3. Sustainability

Product Innovation: Developing new products with sustainable practices
Activity 1: Eco-Product Design Challenge
Duration: 1,5 hours, with flexibility for exploration and creativity
Specific Learning Objectives 1. Inspire participants to ideate sustainable product designs through the lens of product innovation. 2. Integrate sustainable practices within the design thinking process, focusing on eco-friendly materials and lifecycle considerations. 3. Encourage critical thinking on how sustainability influences the innovation journey from concept to prototype.
Methodology, Resources and Devices - **Approach:** Hands-on prototyping with open dialogue on sustainability at each stage. - **Resources:** Recycled materials (e.g., cardboard, paper, plastic items), biodegradable materials (e.g., bamboo or cornstarch-based items), markers, glue, scissors. - **Devices:** Phones or tablets for quick online research on sustainable practices, if needed.
Description of the activity and Key Concepts This activity unfolds as an eco-design sprint, in which teams embark on a quest to conceptualize an innovative product that adheres to sustainable principles. Instead of step-by-step guidance, participants are encouraged to organically move through brainstorming, prototyping, and reflection, fostering both autonomy and creativity. 1. **Setting the Stage:** Begin by introducing the concept of sustainability in product design. Highlight the importance of a product's life cycle—considering factors from material sourcing and production processes to disposal and environmental impact.

2. **Design Challenge:** Teams are prompted to brainstorm and design a prototype of a sustainable product that solves a common problem (e.g., a biodegradable water bottle, eco-friendly packaging). Each team has a unique theme to encourage variety in innovation.
3. **Green Constraints:** To add depth, give each team specific "eco-constraints" such as limiting waste or focusing on biodegradable materials. They should consider the environmental impact of each decision made in their design process.
4. **Prototyping:** Using recycled or biodegradable materials, teams create a rough model of their product. Encourage unconventional thinking—how can traditional items be reimagined as sustainable?
5. **Presentation and Reflection:** Each team presents their prototype, sharing insights into their design choices and discussing how they prioritized sustainability.

Key Concepts: Sustainable lifecycle, material sourcing, impact assessment, eco-conscious design.

Assessment

- **Observation:** Evaluate the group dynamics, noting innovative approaches, sustainable decisions, and problem-solving strategies.
- **Self-Reflection Prompt:** At the end, each participant writes a brief note on their biggest "aha moment" related to sustainability during the activity, as well as how they might implement eco-thinking in future design processes.

Skills/Abilities developed

- **Product Innovation:** Crafting new products with sustainable practices.
- **Design Thinking:** Creative problem-solving with an emphasis on lifecycle and eco-impact.
- **Sustainability Awareness:** Developing a conscious mindset regarding materials and the environment.

Further readings, activities, materials, best practices

- "The Circular Economy: A Wealth of Flows" by Ken Webster
- Cradle to Cradle: Remaking the Way We Make Things by William McDonough & Michael Braungart
- Online Article: Designing for the Circular Economy - Ellen MacArthur Foundation

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INNOVATION AND GREEN DESIGN

Product Innovation: Developing new products with sustainable practices

THE ECO-PRODUCT DESIGN CHALLENGE

Duration: 90 minutes, with flexibility for exploration and creativity

Learning Objectives:

🎯Inspire participants: Ideate sustainable product designs through innovation

🌱Integrate sustainability: Apply eco-friendly materials and lifecycle considerations

💡 Encourage critical thinking: Explore how sustainability impacts the innovation process

METHODOLOGY, RESOURCES AND DEVICES

Methodology, Resources and Devices:

🛠️Approach: Hands-on prototyping with open dialogue on sustainability

♻️Resources: Recycled materials, biodegradable items, markers, glue and scissors

📱 Devices: Phones/tablets for online research

DESCRIPTION OF THE ACTIVITY

Description of the activity:

1. Setting the Stage: Introduce sustainability in product design 🌍
2. Design Challenge: Teams brainstorm sustainable products 🤔
3. Green Constraints: Teams follow eco-friendly rules ♻️
4. Prototyping: Build using recycled/biodegradable materials 🏗️
5. Presentation & Reflection: Teams present ideas and insights 🎤

ASSESSMENT & SKILLS DEVELOPED

Assessment:

📝 Observation: Evaluate group dynamics, innovation, sustainability choices

💭 Self-Reflection: Each participant writes a short note on their biggest “aha moment” in sustainability

Skills Developed:

🏭 Product Innovation: Crafting new products with sustainable practices

🧩 Design Thinking: Creative problem-solving with eco-impact awareness

🌿Sustainability awareness: Conscious decision-making about materials

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Submodule 7.2

Process Innovation: Improving business processes for sustainability

→ **Skills:**

1. Process innovation
2. Efficiency improvement
3. Sustainability

Process Innovation: Improving business processes for sustainability
Activity 1: Sustainable Process Re-Design Workshop
Duration: 1,5 hours
Specific Learning Objectives 1. Foster an understanding of process innovation with a focus on sustainable practices and efficiency. 2. Equip participants with skills to critically assess and improve business processes by minimizing environmental impact. 3. Encourage participants to creatively apply sustainability principles in operational settings.
Methodology, Resources and Devices - **Approach:** Scenario-based workshop with brainstorming, process mapping, and peer feedback. - **Resources:** Process flowchart templates, markers, sticky notes, sample business case documents on existing processes. - **Devices:** Projector or screen for displaying examples; optional laptops/tablets for digital flowchart creation.
Description of the activity and Key Concepts Participants engage in a hands-on re-design workshop where they examine and innovate around standard business processes to make them more sustainable. Using real-life scenarios, participants reimagine workflows with sustainability as the guiding principle. 1. **Scenario Setup:** Introduce participants to a fictional business scenario, such as a manufacturing plant or office operation, where processes have environmental impacts (e.g., excess waste, high energy usage).

2. **Identifying Inefficiencies:** In small groups, participants map out the current process using flowcharts, identifying inefficiencies or unsustainable practices. Each group will discuss which parts of the process contribute most to environmental harm or waste.
3. **Process Innovation Challenge:** Groups brainstorm alternative ways to reduce the carbon footprint, conserve resources, or streamline steps. Encourage them to think of eco-friendly technology, alternative energy sources, and waste reduction.
4. **Redesign and Presentation:** Each group redesigns the process to align with sustainability goals, reworking the flowchart to integrate eco-conscious elements and more efficient practices.
5. **Reflection and Discussion:** Teams present their redesigned processes to each other, discussing the potential impact and feasibility. The session wraps up with participants reflecting on how process innovation can drive sustainability and improve business efficiency.

Key Concepts:
Process efficiency, environmental impact reduction, resource conservation, green innovation.

Fictional Scenarios for Sustainable Process Re-Design Workshop:

Scenario 1: GreenMart – Eco-Friendly Retail Chain

Description: GreenMart is a mid-sized retail chain that specializes in organic and locally sourced groceries. Despite its focus on sustainability in products, GreenMart faces inefficiencies in its operational processes.

Current Challenges:

- **Inventory Waste:** Products are often overstocked, leading to waste due to expiration.
- **Packaging Waste:** Shipments from suppliers use excessive plastic packaging.
- **Energy Usage:** Stores are open 24/7, using large amounts of lighting and refrigeration energy.

Task for Group: Re-design GreenMart's inventory management, packaging handling, and store operations to reduce waste, minimize energy consumption, and align with their eco-friendly brand

Scenario 2: PureClean – Green Cleaning Solutions Manufacturing

Description: PureClean produces eco-friendly cleaning products in a manufacturing facility focused on green practices. However, the production process itself has inefficiencies that lead to environmental harm.

Current Challenges:

- **Water Usage:** High levels of water are used for cleaning equipment after production runs.
- **Energy Consumption:** The facility relies on non-renewable energy sources for heating and manufacturing processes.
- **Chemical Waste:** Some ingredients are wasted during the mixing stage, leading to hazardous waste disposal challenges.

Task for Group: Re-engineer PureClean's manufacturing process to reduce water and energy usage, and suggest methods to minimize chemical waste, potentially by recycling within the production line.

Scenario 3: GoFast Logistics – Sustainable Transportation Service

Description: GoFast Logistics provides local delivery services with a commitment to sustainability. However, the company's logistics and transport processes are leading to high carbon emissions and inefficiencies.

Current Challenges:

- **Fleet Emissions:** A large portion of the fleet uses diesel trucks, leading to high carbon emissions.
- **Route Inefficiencies:** Poor route planning results in longer delivery times and more fuel usage.
- **Packaging Impact:** Single-use packaging is frequently used, which creates unnecessary waste.

Task for Group: Innovate new strategies for GoFast's transportation and delivery planning. This could include adopting alternative fuel vehicles, optimizing route planning, and using sustainable packaging materials.

Assessment

- **Peer Feedback:** Teams provide constructive feedback on each other's redesigned processes, discussing sustainability improvements and practical challenges.
- **Short Reflective Summary:** After the session, each participant writes a summary highlighting the most sustainable aspects of their redesign and what they learned about process innovation.

Skills/Abilities developed

- **Process Innovation:** Improving workflows to enhance sustainability.
- **Efficiency Improvement:** Identifying waste or inefficiency and streamlining processes.
- **Sustainability Mindset:** Applying eco-conscious thinking to traditional processes.

Further readings, activities, materials, best practices

- “The Circular Economy: A Wealth of Flows” by Ken Webster
- Cradle to Cradle: Remaking the Way We Make Things by William McDonough & Michael Braungart
- Online Article: Designing for the Circular Economy - Ellen MacArthur Foundation

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Process Innovation: Improving business processes for sustainability

SUSTAINABLE PROCESS RE-DESIGN WORKSHOP

Duration: 75-90 minutes

Learning Objectives:

🌍 Understand process innovation with a focus on sustainability

⚙️ Develop skills to assess & improve business processes

💡 Apply eco-conscious thinking to real-world operational settings

Methodology, Resources and Devices:

🎯 Approach: Scenario-based workshop (brainstorming, peer feedback)

📂 Resources: Flowchart templates, sticky notes, sample business cases

💻 Devices: Projector/screen; optional laptops/tablets for digital mapping

DESCRIPTION OF THE ACTIVITY

Description of the activity:

1️⃣ Scenario Setup: Introduce a fictional business case with sustainability challenges 🏭

2️⃣ Identifying Inefficiencies: Map current processes and highlight inefficiencies 🔍

3️⃣ Process Innovation Challenge: Brainstorm ways to optimize workflows 💡

4️⃣ Redesign & Presentation: Groups present their redesigned process 📊

5️⃣ Reflection & Discussion: Feedback exchange & real-world applications 🗣️

ASSESSMENT & SKILLS DEVELOPED

Assessment:

📝 Peer Feedback: Groups discuss practical challenges & improvements

✍️ Reflective Summary: Participants highlight key takeaways

Skills Developed:

🚀 Process Innovation: Optimizing workflows for sustainability

🔄 Efficiency Improvement: Identifying & reducing waste

🌍 Sustainability Mindset: Integrating eco-conscious strategies

FICTIONAL SCENARIOS FOR SUSTAINABLE PROCESS RE-DESIGN WORKSHOP

Scenario 1: GreenMart – Eco-Friendly Retail Chain 🛒

Description: GreenMart specializes in organic and locally sourced groceries but faces inefficiencies in its operations

Current Challenges:

📦 Inventory Waste: Overstocking leads to expiration and waste

♻️ Packaging Waste: Excessive plastic packaging from suppliers

💡 Energy Usage: 24/7 store operation with high energy consumption

Task for Group: Re-design inventory management, packaging handling, and store operations to reduce waste, minimize energy, and align with sustainability

FICTIONAL SCENARIOS FOR SUSTAINABLE PROCESS RE-DESIGN WORKSHOP

Scenario 2: PureClean – Green Cleaning Solutions Manufacturing 🧼

Description: PureClean manufactures eco-friendly cleaning products but has inefficiencies in its production process

Current Challenges:

💧 Water Usage: High water consumption for cleaning equipment

⚡ Energy Consumption: Non-renewable energy for heating and manufacturing

⚠️ Chemical Waste: Wasted ingredients during mixing cause hazardous waste

Task for Group: Re-engineer production to reduce water and energy usage, and minimize chemical waste, exploring recycling within the process

FICTIONAL SCENARIOS FOR SUSTAINABLE PROCESS RE-DESIGN WORKSHOP

Scenario 3: GoFast Logistics – Sustainable Transportation Service 🚚

Description: GoFast provides local delivery services, aiming for sustainability, but faces carbon emissions and inefficiency issues

Current Challenges:

🚛 Fleet Emissions: Diesel trucks causing high carbon emissions

🛣️ Route Inefficiencies: Poor route planning increases fuel usage

♻️ Packaging Impact: Overuse of single-use packaging

Task for Group: Innovate strategies for alternative fuel vehicles, optimize route planning, and switch to sustainable packaging

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Submodule 7.3

Business Model Innovation: Creating innovative and sustainable business models

→ **Skills:**

1. Business model innovation
2. Strategic thinking
3. Sustainability

Business Model Innovation: Creating innovative and sustainable business models
Activity 1: The Green Blueprint Challenge
Duration: 1,5 hours
Specific Learning Objectives 1. Inspire participants to envision and construct innovative business models grounded in sustainability. 2. Cultivate strategic thinking around profitability balanced with environmental and social responsibility. 3. Strengthen participants' understanding of sustainability as a core component in business model creation.
Methodology, Resources and Devices - **Approach:** Creative business simulation through group brainstorming, model creation, and collaborative critique. - **Resources:** Large whiteboards or flipchart paper, markers, sticky notes, sample business model canvas templates. - **Devices:** Optional tablets/laptops for research on sustainable business practices.
Description of the activity and Key Concepts In this activity, participants form small “consulting firms” tasked with developing a revolutionary business model for a fictional company. They dive into the heart of creating a sustainable value proposition while balancing environmental and social goals with profitability. 1. **The Context** – Set the scene: Each “consulting firm” receives a brief outlining a fictional company with specific sustainability issues (see scenarios below).

Participants are encouraged to consider how they could redesign or transform the company's business model to be both profitable and sustainable.

2. **Designing the Green Blueprint** – Each team builds a business model using the Business Model Canvas framework. They map out key aspects such as value propositions, customer segments, revenue streams, and cost structures, all with a sustainable twist. Encourage participants to explore how the model can support eco-friendly initiatives, community engagement, and long-term resilience.
3. **Challenge Constraints** – Each team must integrate two "green challenges" into their model, such as reducing waste, adopting renewable resources, or contributing to local communities. These challenges should push participants to think outside of traditional business strategies.
4. **Consultation Round** – Teams rotate and offer constructive feedback on each other's models. The goal is to challenge assumptions, suggest eco-innovations, and refine each other's approaches.
5. **Presentation and Reflection** – Teams present their final model, justifying the sustainability-focused decisions they incorporated. End with a reflective discussion on how business model innovation can drive change toward sustainable development.

Fictional Scenarios for The Green Blueprint Challenge:

Scenario 1: EcoFoods – Sustainable Urban Farming

Description: EcoFoods is a small business specializing in urban farming, growing organic produce within city limits to supply local restaurants and grocery stores. While they prioritize fresh, local produce, EcoFoods faces sustainability and growth challenges.

Sustainability Issues:

- **Resource Efficiency:** High water and energy usage due to year-round farming in indoor urban spaces.
- **Supply Chain Impact:** They rely on non-reusable plastic containers for delivery to prevent spoilage, resulting in considerable waste.
- **Limited Reach:** EcoFoods only supplies to a handful of restaurants, and expansion options are limited by space constraints.

Task for Teams: Develop a business model that expands EcoFoods' market reach while addressing issues of resource efficiency and waste reduction. Consider potential partnerships, alternative packaging, and resource management technologies.

Scenario 2: GreenTech Rentals – Sustainable Electronics Rental

Description: GreenTech Rentals offers short-term rentals of electronics and tech gadgets, from laptops to cameras, aimed at reducing consumer waste by promoting shared ownership over single-use purchases. However, the company is grappling with operational hurdles that challenge their sustainable mission.

Sustainability Issues:

- **Product Lifecycle Management:** Devices are discarded when they become outdated or damaged, leading to e-waste.
- **High Carbon Footprint:** Shipping and returns for devices require significant transportation resources, adding to carbon emissions.
- **Maintenance Costs:** Devices require regular repairs and updates to stay viable for rental, leading to increased operational costs and resource use.

Task for Teams: Create a business model that addresses e-waste through innovative product lifecycle solutions, minimizes carbon emissions from logistics, and ensures device sustainability without high maintenance costs. Ideas could include subscription models, circular economy principles, or local partnerships to reduce transportation needs.

Scenario 3: ClearFuture Textiles – Eco-Friendly Clothing Brand

Description: ClearFuture Textiles designs eco-conscious clothing using organic materials, catering to customers who prioritize sustainability. However, fast fashion competitors have been a challenge, making it difficult to keep prices competitive while maintaining green practices.

Sustainability Issues:

- **Material Sourcing Costs:** Organic and fair-trade materials are costly, impacting pricing competitiveness.
- **Waste Management:** The design and production process produces fabric waste, which is difficult to recycle or repurpose.
- **Customer Engagement:** ClearFuture struggles with educating customers on the value of sustainable clothing compared to cheaper, non-sustainable options.

Task for Teams: Innovate a business model that makes sustainable clothing accessible and attractive to a broader customer base, while addressing fabric waste and material costs. Options might include a recycling program,

customer incentives for sustainable purchasing, or educational initiatives to raise awareness about sustainable fashion.

Assessment

- **Peer Evaluation:** Each team provides feedback to other groups, with a focus on practicality, creativity, and depth of sustainability within the business model.
- **Instructor's Summary Assessment:** Facilitator assesses the models based on how effectively each integrates sustainable practices into a viable business plan.

Skills/Abilities developed

- **Business Model Innovation:** Generating creative, impactful business models.
- **Strategic Thinking:** Balancing profitability and social impact in business strategies.
- **Sustainability Awareness:** Developing a framework for eco-conscious business growth.

Further readings, activities, materials, best practices

- "Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers by Alexander Osterwalder & Yves Pigneur.
- "Creating Sustainable Business Models" – Research article on integrating sustainability into business frameworks.
- **Case Study Resource:** Sustainable Business Models by the Cambridge Institute for Sustainability Leadership – Offers case studies and insights on sustainable strategies in business.

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Business Model Innovation: Creating innovative and sustainable business models

THE GREEN BLUEPRINT CHALLENGE

Duration: 70-90 minutes

Learning Objectives:

🚀 Inspire participants to create innovative, sustainability-driven business models

💡 Develop strategic thinking balancing profitability with social and environmental responsibility

🌱 Strengthen understanding of sustainability as a core element in business model design

METHODOLOGY, RESOURCES AND DEVICES

Methodology, Resources and Devices:

🛠️ Approach: Business simulation through group brainstorming, model creation & critique

📝 Resources: Whiteboards/flipchart paper, markers, sticky notes

📱 Devices: Optional tablets/laptops for sustainable business research

DESCRIPTION OF THE ACTIVITY

Description of the activity:

1. The Context: Each team acts as a consulting firm, redesigning a fictional company to be sustainable & profitable
2. The Green Blueprint: Use Business Model Canvas to map value propositions, revenue streams & eco-friendly strategies
3. Challenge Constraints: Each team must tackle two green challenges (e.g., waste reduction, renewable energy, community impact)
4. Consultation & Refinement: Teams rotate & provide feedback to refine their models

ASSESSMENT & SKILLS DEVELOPED

Assessment:

🤝 Peer Evaluation: Teams critique each other's models based on practicality, creativity & sustainability depth

🏆 Facilitator’s Assessment: Review of business models for effective sustainability integration

Skills Developed:

🏗️ Business Model Innovation: Creating sustainable business frameworks

🎯 Strategic Thinking: Balancing profitability & social responsibility

🌱 Sustainability Awareness: Embedding eco-conscious practices into business growth

FICTIONAL SCENARIOS FOR THE GREEN BLUEPRINT CHALLENGE

Scenario 1: EcoFoods – Sustainable Urban Farming

Business Overview: EcoFoods specializes in urban farming, growing organic produce within city limits to supply local restaurants and grocery stores

Sustainability Challenges:

💧 Resource Efficiency: High water and energy consumption for indoor farming

🚮 Supply Chain Waste: Non-reusable plastic containers for deliveries, causing environmental waste

📍 Limited Reach: Only a small network of restaurants

Task for Teams: Develop a business model that expands EcoFoods' market reach while addressing issues of resource efficiency and waste reduction

FICTIONAL SCENARIOS FOR THE GREEN BLUEPRINT CHALLENGE

Scenario 2: GreenTech Rentals – Sustainable Electronics

Business Overview: GreenTech Rentals promotes short-term tech rentals to reduce consumer waste by enabling shared ownership

Sustainability Challenges:

🖥️ E-Waste Problem: Outdated/damaged devices are discarded

🚛 High Carbon Footprint: Shipping & returns generate significant emissions

🛠️ Maintenance Costs: Frequent repairs & updates strain resources

Task for Teams: Develop circular economy strategies for product lifecycle management, reduce logistics emissions via local partnerships and explore subscription-based models to extend device lifespan sustainably

FICTIONAL SCENARIOS FOR THE GREEN BLUEPRINT CHALLENGE

Scenario 3: ClearFuture Textiles – Eco-Friendly Clothing Brand

Business Overview: ClearFuture Textiles creates sustainable fashion using organic materials, prioritizing ethical production

Sustainability Challenges:

🌿 High Material Costs: Fair-trade materials are expensive, limiting affordability

✂️ Fabric Waste: Production leads to significant textile waste

🛍️ Low Customer Awareness: Consumers struggle to see the value of sustainable fashion vs. cheaper fast fashion options

Task for Teams: Develop an affordable sustainable fashion model, implement a fabric waste recycling program and create customer education campaigns

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Submodule 7.4

Green Design: Principles of eco-design for products and services

→ **Skills:**

1. Eco-design
2. Environmental impact assessment
3. Sustainable design

Green Design: Principles of eco-design for products and services
Activity 1: Eco-Innovators Lab: Blueprinting a Green Design
Duration: 1 Hour and 15 Minutes
Specific Learning Objectives 1. Explore foundational principles of eco-design and sustainable design. 2. Analyze and evaluate environmental impacts of product and service designs. 3. Foster creative, practical approaches to reducing environmental footprint.
Methodology, Resources and Devices - **Approach:** Creative business simulation through group brainstorming, model creation, and collaborative critique. - **Resources:** Large whiteboards or flipchart paper, markers, sticky notes, sample business model canvas templates. - **Devices:** Optional tablets/laptops for research on sustainable business practices.
Method & Flow Instead of traditional stages, this activity follows a creative "Lab" approach, encouraging participants to develop concepts in rounds with feedback cycles and visual representation. **Setup:** Each team is a “Design Lab” assigned to create an eco-friendly product or service concept from scratch or improve an existing design. They use eco-design principles to guide their process, with materials that include the product's lifecycle, resource inputs, energy usage, waste reduction, and recyclability. 1. **Round 1 – Ideation and Design Brief** Teams start by brainstorming product/service ideas and drafting a simple "design brief" that explains their idea’s purpose and target user, outlining how it

fits into a sustainable future. This brief should outline the main features that align with eco-design principles.

2. **Round 2 – Environmental Impact Assessment**
   Each team then moves into an "impact assessment" where they outline potential environmental impacts of their design idea, examining materials, energy consumption, and waste. To do this, they use worksheets that guide them through a simplified Life Cycle Assessment (LCA) process.
   Example prompts on the worksheet:
   - What materials are essential, and how sustainable are they?
   - What energy will the product consume during use?
   - Can parts of it be recycled or reused?
3. **Round 3 – Refinement Lab**
   Based on their impact assessment, teams refine their designs to reduce the environmental footprint. For example, they might explore alternative materials, modular designs, or strategies to increase the product's durability or recyclability. Each team then creates a "Green Blueprint" poster that visually presents their eco-design, using sketches and labels.
4. **Peer Lab Exchange**
   Teams visit each other's "labs" to give feedback, ask questions, and discuss alternatives for further minimizing the environmental impact. They make notes for improvements based on peer suggestions.

Examples of services or products on Eco-Innovators Lab
The Examples of the services or products should **NOT** be handed to the participants rather than just to be guidance for the trainer or the educator to lead the activity and offer assistance to groups which do not know how to find a lead.

Example 1: Product Idea – Eco-Friendly Modular Backpack

Design Brief:

- **Product Name:** GreenPack Modular Backpack
- **Target User:** Urban commuters, students, and travelers looking for a sustainable, customizable bag option.
- **Purpose:** The GreenPack is designed to reduce waste by using a modular system where different compartments and accessories can be added, removed, or replaced as needed. Made from recycled materials, each module can be repurposed or recycled individually, extending the backpack's lifespan and minimizing waste.

Eco-Design Principles Integrated:

- **Sustainable Materials:** The bag is constructed from recycled polyester and natural, biodegradable dyes.

- **Modularity:** Users can replace or upgrade specific parts (like straps or pockets) instead of discarding the entire backpack.
- **End-of-Life Consideration:** The GreenPack has a return-to-recycle program where old components are taken back for recycling.

Environmental Impact Assessment Highlights:

- Minimal carbon footprint by using locally sourced recycled materials.
- Recyclable and compostable packaging.
- Design that minimizes the need for replacements and encourages repair.

Example 2: Service Idea – Zero-Waste Cafeteria Program

DesignBrief:

- **Service Name:** GreenMeal Cafeteria Program
- **Target User:** Corporate and school cafeterias aiming to reduce food and packaging waste.
- **Purpose:** GreenMeal provides cafeterias with a zero-waste solution by offering a meal service that reduces single-use plastics, optimizes food portioning to limit waste, and supports composting initiatives. All meals are served in reusable containers, and a composting station is provided for leftover food scraps.

Eco-Design Principles Integrated:

- **Waste Reduction:** Elimination of single-use plastics and paper products.
- **Resource Efficiency:** Pre-ordering and portion sizing to minimize leftover food.
- **Community Impact:** Encourages sustainable behavior among cafeteria users through educational displays and clear signage.

Environmental Impact Assessment Highlights:

- Significant reduction in waste generated from daily operations.
- Composting system that reduces food waste by turning it into natural fertilizer.
- Reduced greenhouse gas emissions by limiting transportation needs through pre-ordering.

Example 3: Product Idea – Solar-Powered Garden Watering System

Design Brief:

- **Product Name:** SunSprout Watering System
- **Target User:** Home gardeners and small-scale farmers looking to reduce water and energy use.
- **Purpose:** SunSprout is an automatic watering system powered by solar energy, designed to optimize water use in gardens and farms. Sensors measure soil moisture, and the system only waters when needed, conserving both energy and water. The system's modular design allows it to be easily expanded or repaired.

Eco-Design Principles Integrated:

- **Energy Efficiency:** The entire system operates on solar power, reducing reliance on conventional energy sources.
- **Water Conservation:** Soil moisture sensors ensure water is used only when necessary, minimizing wastage.
- **Modularity and Durability:** Components can be easily replaced or repaired, extending the product's life.

Environmental Impact Assessment Highlights:

- Decreased water usage due to smart irrigation technology.
- Use of sustainable materials for casing and parts, which can be recycled.
- Zero operational carbon emissions due to solar power integration.

Assessment

Participants submit a final "Eco Blueprint," which is assessed on:

- **Sustainability of Design** – How well does it incorporate eco-design principles?
- **Creativity and Practicality** – Are the ideas innovative yet feasible?
- **Environmental Impact** – How effectively have they minimized the environmental footprint?

Skills/Abilities developed

- **Eco-Design Application:** Crafting products/services aligned with environmental values.
- **Critical Analysis:** Identifying and mitigating environmental impacts.
- **Creativity in Sustainability:** Generating original, eco-conscious ideas.

Further readings, activities, materials, best practices

- **"Cradle to Cradle: Remaking the Way We Make Things"** by William McDonough and Michael Braungart – A foundational book on sustainable design.
- **EcoDesign: An Updated Guide to Ecological Materials and Sustainability** (online resource with practical examples) – Sustainable Design Resource
- **"The Upcycle: Beyond Sustainability – Designing for Abundance"** by McDonough and Braungart

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Developing VET Entrepreneurial Green Mindset and skills for Small-Business Development

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INNOVATION AND GREEN DESIGN

Green Design: Principles of eco-design for products and services

ECO-INNOVATORS LAB: BLUEPRINTING A GREEN DESIGN

Duration: 1 hour and 15 minutes

Learning Objectives:

✅ Understand eco-design & sustainable design principles

🔍 Analyze environmental impacts of product & service designs

💡 Develop creative solutions to reduce environmental footprints

Methodology, Resources and Devices:

🚀 Approach: Creative business simulation with brainstorming, modeling & feedback

📝 Resources: Whiteboards, sticky notes, business model canvas templates

💻 Devices: Tablets/laptops for research on sustainable business practices

DESCRIPTION OF THE ACTIVITY

Description of the activity:

💡 Phase 1 – Ideation & Design Brief: Teams brainstorm eco-friendly product/service ideas, create a design brief defining purpose & target audience

🔬 Phase 2 – Environmental Impact Assessment: Teams evaluate sustainability by examining: materials, energy use and recyclability

🛠️ Phase 3 – Refinement Lab: Teams refine designs based on impact assessment and create a Green Blueprint poster with sketches & labels

🔄 Phase 4 – Peer Lab Exchange: Teams visit other “labs” to give feedback & suggest improvements

ASSESSMENT & SKILLS DEVELOPED

Assessment:

🌱 Sustainability of Design: Incorporation of eco-design principles

🎨 Creativity & Practicality: Innovation balanced with feasibility

♻️ Environmental Impact: Effectiveness in minimizing footprint

Skills Developed:

🏗️ Eco-Design Application: Crafting sustainable products/services

🔍 Critical Analysis: Identifying & mitigating environmental impacts

💡 Creativity in Sustainability: Generating original, eco-conscious ideas

EXAMPLES OF SERVICES OR PRODUCTS ON ECO-INNOVATORS LAB

Example 1: Product Idea – Eco-Friendly Modular Backpack

🎒**Product Name:** GreenPack Modular Backpack

👥 **Target User:** Urban commuters, students & travelers

🌍 **Purpose**: Reduce waste with a modular system allowing users to replace or upgrade compartments instead of discarding the entire backpack

🌱 **Eco-Design Principles:** Sustainable Materials, modularity and end-of-life plan

🌿 **Environmental Impact Assessment:** Minimal carbon footprint, Eco-packaging & Repair over replace

EXAMPLES OF SERVICES OR PRODUCTS ON ECO-INNOVATORS LAB

Example 2: Service Idea – Zero-Waste Cafeteria Program

🍽️ **Service Name:** GreenMeal Cafeteria Program

👥 **Target User:** Corporate & school cafeterias

🌍 **Purpose:** Provide a zero-waste meal service, eliminating single-use plastics, optimizing food portions and supporting composting initiatives

🌱 **Eco-Design Principles:** Waste Reduction, Resource Efficiency, Community Impact

🌿 **Environmental Impact Assessment:** Lower waste production, composting system and fewer transport emissions

EXAMPLES OF SERVICES OR PRODUCTS ON ECO-INNOVATORS LAB

Example 3: Product Idea – Solar-Powered Garden Watering System

💦 **Product Name:** SunSprout Watering System

👥 **Target User:** Home gardeners & small-scale farmers

🌍 **Purpose:** Solar-powered smart irrigation system that optimizes water use based on real-time soil moisture levels

🌱 **Eco-Design Principles:** Energy Efficiency, water Conservation, modular & Durable

🌿 **Environmental Impact Assessment:** Lower water usage, sustainable materials and zero carbon emissions – solar power = clean energy

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