MODULE 2

Reasoning, Problem-Solving and Ideation	
Duration:	8 hours
Learning objectives:	**Critical Thinking & Analysis** – Develop the ability to evaluate arguments, identify biases, assess information reliability, and make well-reasoned judgments. **Problem-Solving & Decision-Making** – Use structured methods (e.g., 5 Whys, SWOT analysis) to define problems, generate solutions, and make informed decisions. **Creative Thinking & Innovation** – Generate and refine original ideas, challenge conventional thinking, and apply creativity to real-world situations. **Entrepreneurial Mindset & Adaptability** – Identify opportunities, manage risks, mobilize resources effectively, and build resilience for continuous growth.
Sub-Modules:	- Critical Thinking: Enhancing analytical skills and logical reasoning. → *Skills*: Critical thinking, logical reasoning - Problem-Solving Skills: Methods and tools for effective problem-solving → *Skills*: Problem-solving, analytical thinking, decision making - Creative Thinking: ideation and innovation → *Skills*: Creative thinking - Integrating creativity and critical thinking skills for Entrepreneurial mindset (see Entrecomp)

Resources and devices:	https://nbsdi.ng/ ● Online video tutorials ● Articles ● Textbooks Farrell, Kathleen (2018) "Embedding Ethical and Sustainable Thinking in the Entrepreneurial Mindset,"
Assessment:	● Critical Thinking Assessment – Evaluate arguments through analysis exercises, fact vs. opinion tests, and case study reviews. ● Problem-Solving Evaluation – Use structured techniques like the 5 Whys, SWOT analysis, and decision-making scenarios to assess problem-solving abilities. ● Creative Thinking Tasks – Conduct brainstorming sessions, innovation challenges, and idea-pitching exercises to measure creativity. ● Entrepreneurial Mindset Assessment – Analyze business opportunities, manage risks, and study real-world adaptability through case studies and scenario-based tasks. ● Practical Application & Real-World Scenarios – Engage participants in hands-on problem-solving, decision-making, and creativity-driven tasks to assess overall skill development.
Skills/abilities developed:	Critical Thinking; Critical thinking, logical reasoning Problem-Solving Skills, Analytical thinking, decision making Creative Thinking

Submodule 2.1

Critical Thinking: Enhancing analytical skills and logical reasoning.

→ **Skills:**

1. Critical Thinking
2. Logical Reasoning

CRITICAL THINKING: ENHANCING ANALYTICAL SKILLS AND LOGICAL REASONING
Activity 1: Understanding and Applying Critical Thinking
Duration: 2 hours
Specific Learning Objectives 1. Develop critical thinking abilities to evaluate information and arguments effectively 2 Strengthen logical reasoning to make sound, evidence-based conclusions.
Methodology, Resources and Devices **Methodology** 1. **Lectures and Interactive Presentations**: o Introduce the basics of critical thinking, logical reasoning, and key concepts (like argument structure, biases, and fallacies). o Use multimedia presentations with real-life examples to demonstrate how critical thinking applies to everyday situations. 2. **Case Study Analysis**: o Use case studies to analyze real-world scenarios, encouraging participants to identify logical errors, biases, and assumptions in arguments. o Small group discussions help learners evaluate different perspectives and justify their reasoning.

3. **Problem-Solving Exercises**:
    - Use structured exercises to practice logical reasoning and argument analysis.
    - Activities might include analyzing the logic of an argument, identifying flaws, or debating issues in pairs or small groups.
4. **Critical Thinking Games and Puzzles**:
    - Introduce logic puzzles, critical thinking games (like Sudoku or pattern recognition games), and other activities that require reasoning skills.
    - These help build analytical skills while keeping students engaged in hands-on practice.
5. **Debate and Discussion**:
    - Organize debates and structured discussions where students practice constructing, defending, and critiquing arguments.
    - This improves their ability to analyze positions and apply logical reasoning.
6. **Reflection and Self-Assessment**:
    - Encourage students to reflect on their thinking processes and decisions during activities.
    - Use self-assessment worksheets to help them identify areas for improvement in their reasoning skills.

Resources include video tutorials, textbook readings, case examples, PowerPoint slides, and reflective prompts.

Description of the activity and Key Concepts

Critical thinking is described as a deliberate and structured approach to analyzing information and forming well-founded conclusions. Within this process, logical reasoning serves as a fundamental element, supporting sound decision-making in both daily life and complex business contexts.

Video & Conceptual Introduction

Participants view a short training video explaining the relationship between logical and critical thinking. A brief instructor-led lecture introduces key reasoning types (inductive, deductive, abductive) and the importance of recognizing bias and evidence quality.

Reflection

Learners complete a short self-assessment and write a reflection on how their reasoning skills have developed, including areas for personal growth.

Key Concepts: Argument analysis, logical fallacies, reasoning types, source evaluation, evidence, Socratic method, decision-making, reflective thinking.

Assessment

Assessment is formative and integrated throughout the session:

- Group discussion and feedback on case analysis
- Socratic questioning, engagement, and responses
- Reflective writing on personal application and learning
- Self-assessment

Skills/Abilities developed

1. Analytical thinking and problem-solving
2. Application of inductive, deductive, and abductive reasoning
3. Recognition and avoidance of logical fallacies
4. Evaluation of sources and arguments
5. Structured reflection on cognitive processes
6. Clear, logical communication in professional settings

Resources and further reading

1. **Textbooks and Reference Materials**:

- *Critical Thinking: A Student's Introduction* by Gregory Bassham (or similar critical thinking books).
- *Thinking, Fast and Slow* by Daniel Kahneman for cognitive biases and decision-making.
- Articles on logical reasoning, biases, and critical thinking from reputable sources.

2. **Online Platforms and Apps**:
   - **Khan Academy**: Offers courses and exercises in critical thinking and logic.
   - **Lumosity** or **Peak**: Apps for training cognitive skills like memory, problem-solving, and analytical thinking.
3. **Case Study Repositories**:
   - Use real-world cases from sources like Harvard Business Review, BBC Ethics Case Studies, or accessible public case studies relevant to current events.
4. **Multimedia Resources**:
   - **TED Talks**: Talks on critical thinking, logical fallacies, and cognitive biases (e.g., talks by Daniel Kahneman, Simon Sinek).
   - **YouTube Channels**: Philosophy Tube, Crash Course Philosophy, and other channels that explain logical reasoning, fallacies, and critical thinking skills.
5. **Worksheets and Handouts**:
   - Worksheets for logic puzzles, argument analysis, identifying biases, and other critical thinking exercises.
   - Self-assessment templates for evaluating reasoning skills.

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CONTENT

- Critical Thinking Skills
- Logical Reasoning

Learning Objectives:

Thinking & Analysis – Develop the ability to evaluate arguments, identify biases, assess information reliability, and make well-reasoned judgments.

Problem-Solving & Decision-Making – Use structured methods (e.g., 5 Whys, SWOT analysis) to define problems, generate solutions, and make informed decisions.

Definitions:

Critical thinking involves analyzing information objectively, forming judgments, and solving problems effectively. It's the ability to evaluate information and be aware of biases, including your own. This includes questioning assumptions, identifying biases, and assessing evidence to reach well-reasoned conclusions.

Key aspects of critical thinking include:

- Analysis: Breaking down complex information into smaller parts to understand it better.
- Interpretation: Understanding the meaning of information and its relevance.
- Evaluation: Assessing the credibility and accuracy of information.
- Inference: Drawing logical conclusions based on available information.
- Explanation: Clearly communicating your reasoning and conclusions.
- Self-regulation: Being aware of your own biases and thinking processes.

Benefits of critical thinking:

- Improved decision-making: By carefully considering all aspects of a situation.
- Enhanced problem-solving: By analyzing problems from multiple angles.
- Better communication: By clearly articulating your reasoning and conclusions.
- Increased awareness of biases: By recognizing and challenging your own assumptions.
- Stronger analytical skills: By breaking down complex information and identifying key elements.

https://www.google.com/search?q=importance+of+critical+thinking+skills+and+its+application&sca

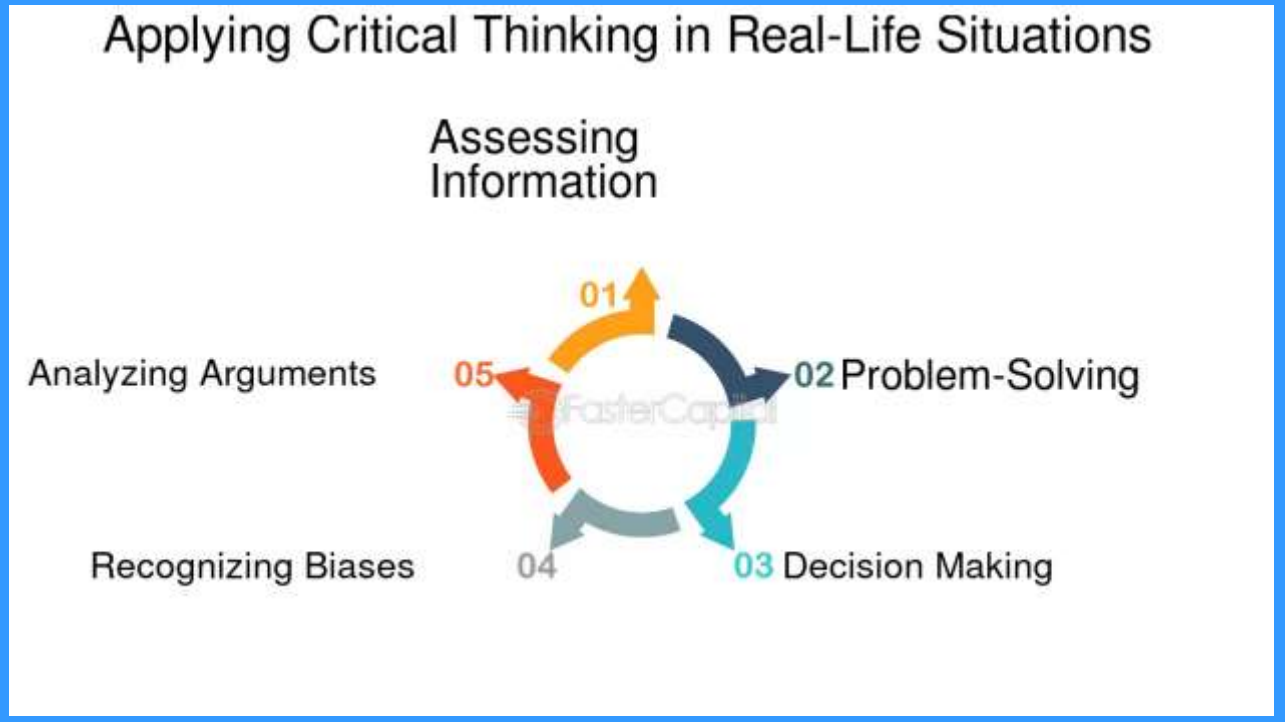
Learning Objectives Cont…:

- Creative Thinking & Innovation – Generate and refine original ideas, challenge conventional thinking, and apply creativity to real-world situations.

- Entrepreneurial Mindset & Adaptability – Identify opportunities, manage risks, mobilize resources effectively, and build resilience for continuous growth.

Sub-module 1

Critical Thinking: Enhancing analytical skills and logical reasoning



Importance of Critical Thinking

Decision-making:
Critical thinking enables individuals to evaluate options, assess consequences, and make sound judgments based on evidence and logic.

Problem-solving:
It helps break down complex issues into smaller parts, identify root causes, and develop innovative solutions.
Communication:

Critical thinkers articulate their ideas clearly and persuasively, fostering understanding and collaboration.
Personal growth:

Self-reflection, a key component of critical thinking, allows individuals to identify biases, learn from mistakes, and improve their skills and knowledge.

Creativity:
By exploring different perspectives and challenging assumptions, critical thinking can spark creativity and lead to innovative ideas.

Applications of Critical Thinking:

- **Business and Management:**

- Critical thinkers can analyze market trends, assess risks, and make strategic decisions to improve business outcomes.

- **Healthcare:**

- Critical thinking is crucial for nurses, doctors, and other healthcare professionals to diagnose conditions, develop treatment plans, and make ethical decisions.

- **Law:**

- Lawyers use critical thinking to analyze evidence, build arguments, and advocate for their clients' interests.

- **Education:**

- Teachers and students alike benefit from critical thinking skills to engage with complex subjects, analyze information, and develop problem-solving abilities.

- **Research:**

- Critical thinkers can analyze research findings, evaluate evidence, and contribute to the advancement of knowledge.

- **Everyday Life:**

- Critical thinking skills are essential for making informed decisions about personal finances, health, and civic engagement.

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CRITICAL THINKING: ENHANCING ANALYTICAL SKILLS AND LOGICAL REASONING

Activity 2: Constructing and evaluating arguments

Duration: 0,5 hour

Specific Learning Objectives

1. Understand the structure and components of a logical argument (claim, evidence, reasoning).
2. Identify strengths and weaknesses in arguments related to green and digital solutions.
3. Develop clear, persuasive arguments that advocate for sustainable practices within their business.
4. Evaluate the effectiveness of arguments by assessing clarity, logic, and supporting evidence.

Methodology, Resources and Devices

Methodologies: lecture, case study scenario, interactive exercise, reflection

Tools used: presentation slides, worksheet, example case study

Description:

- Working individually or in pairs, students analyze each argument, identify its main components (premises, conclusions), and evaluate its validity.
- After analysis, students regroup for a guided discussion on each argument's strengths and weaknesses.

Key Concepts:

- **Argument Structure**: Understanding premises, conclusions, and how arguments are constructed.
- **Logical Validity and Soundness**: Distinguishing between logically valid arguments and those based on flawed reasoning.

- **Fallacies**: Identifying common logical fallacies (e.g., ad hominem, straw man, slippery slope) in arguments.

2 Activity: Real-World Case Study Analysis

Description:

- Students analyze a real-world case study, such as a business decision, ethical dilemma, or historical event;

Critical Thinking Case Study: Ethical Dilemma – Facebook and Data Privacy

💡 **Scenario:** In 2018, Facebook faced backlash over the Cambridge Analytica scandal, where user data was harvested without consent to influence elections. 🔍 **Activity:** Ask participants to analyze the case by identifying the key arguments from Facebook, regulators, and the public. 📌 **Questions:**

- What were the ethical issues involved?
- Was Facebook's response adequate? Why or why not?
- How would you balance user privacy with business needs?

Key Concepts:

- **Analyzing Complex Problems**: Breaking down multi-faceted scenarios to identify main issues and logical relationships.
- **Evaluating Sources and Evidence**: Assessing the quality and reliability of information used in decision-making.
- **Alternative Perspectives and Bias**: Recognizing that different viewpoints and biases may influence interpretation and decision outcomes.

3 **Activity: Self-Reflection on Thinking Process**

Description:

- After completing several critical thinking activities, participants can use a self-reflection worksheet to evaluate their reasoning skills and thought processes. (The trainer can adopt the facebook critical thinking activity for this section)
- Prompts guide them to consider their approach to analyzing arguments, recognizing biases, and identifying areas for improvement.
- This activity encourages personal growth and a deeper awareness of one's cognitive processes.

Key Concepts:

- **Metacognition**: Developing self-awareness in one's own thinking and reasoning processes.
- **Continuous Improvement**: Recognizing areas for improvement in reasoning and setting goals for future learning.
- **Intellectual Humility**: Accepting the limitations of one's understanding and being open to learning.

Assessment

Self-Reflection Assessment – Participants complete a reflective journal or questionnaire analyzing their thought process, biases, and areas for improvement in argument analysis.

Discussion & Feedback – Engage participants in group discussions or peer reviews where they assess each other's reasoning, biases, and intellectual humility, followed by constructive feedback.

Skills/Abilities developed

Critical Thinking: Assessing arguments, identifying biases, evaluating evidence.

Logical Reasoning: Drawing valid inferences, using deductive and inductive reasoning.

Further readings, activities, materials, best practices

Readings, materials, best practices:

- Hinderer, D. (2005) *Building arguments*.
- Sinnott - Armstrong, W. (2018) Think Again: *How to Reason and Argue*.
- YT video: Understanding and Evaluating Arguments (https://courses.lumenlearning.com/olemiss-readinganthology/chapter/understanding-and-evaluating-arguments/)

Activities:

- Reasoning: Interactive article review where learners critique arguments related to green business practices in provided articles.

- Best Practice Case Study: Examples of Kenyan businesses that have successfully implemented digital solutions to reduce their carbon footprint.

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CONTENTS

- Critical Thinking: Enhancing analytical skills and logical reasoning
- Description of the activity and Key Concepts

Activity 2: Critical Thinking: Enhancing analytical skills and logical reasoning

Engage students with logic puzzles, Sudoku, and pattern recognition games to develop analytical skills through hands-on practice.

Conduct structured debates and discussions to enhance students' ability to construct, defend, and critique arguments using logical reasoning.

Encourage students to evaluate their thought processes and decisions through reflection and self-assessment worksheets to improve reasoning skills.

Description of the activity and Key Concepts

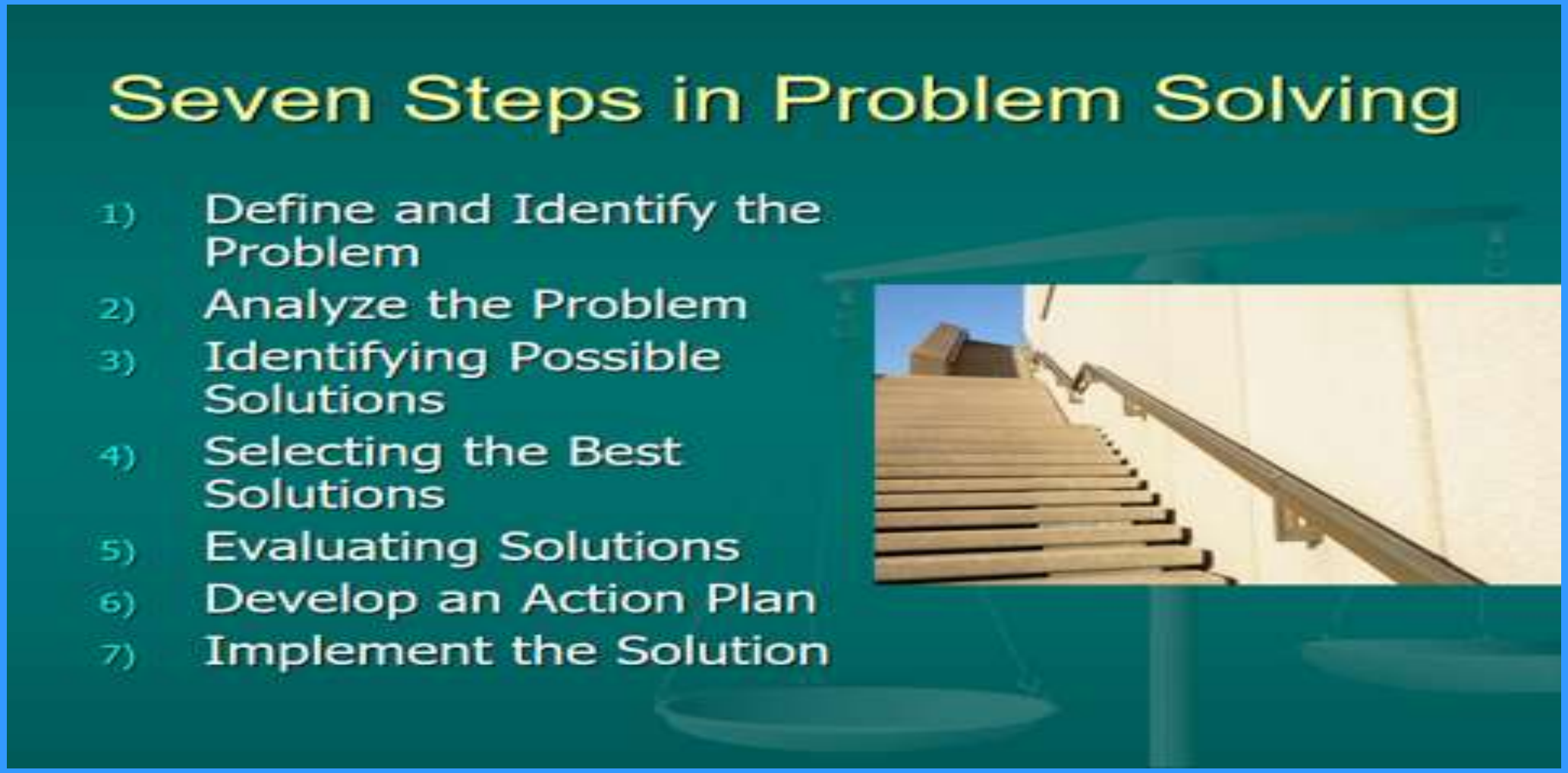
Argument Analysis Workshop

Understanding argument structure, logical validity, and common fallacies to assess reasoning effectively

Self-Reflection on Thinking Process

Participants use a self-reflection worksheet to assess reasoning skills, recognize biases, and identify areas for improvement, fostering personal growth.

Problem-Solving Skills: Methods and tools for effective problem-solving



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Submodule 2.2

Problem-Solving Skills: Methods and tools for effective problem-solving

→ **Skills:**

1. Problem-solving
2. Analytical thinking
3. Decision making

Activity 1: Problem-Solving Skills: Methods and tools for effective problem-solving

Duration: 2 Hours

Specific Learning Objectives

1. **Develop Problem-Solving Skills:**
    - Understand the problem-solving process.
    - Identify and analyze problems effectively.
2. **Enhance Analytical Thinking:**
    - Apply critical thinking to evaluate information.
    - Use logical reasoning to break down complex issues.
3. **Improve Decision-Making Abilities:**
    - Make informed decisions based on data and analysis.
    - Evaluate the outcomes of decisions and adjust strategies accordingly.

Methodology, Resources and Devices

Methodology

1. **Lectures and Interactive Presentations**:
    - Introduce problem-solving frameworks and tools, such as the 5 Whys, root cause analysis, brainstorming techniques, and SWOT analysis.

- Provide real-world examples that illustrate how these tools are applied in various fields.

2. **Hands-On Workshops**:
   - Facilitate workshops where students work in groups to apply different problem-solving tools to specific scenarios.
   - Each group tackles a unique problem and presents their process and findings to the class.
3. **Guided Case Studies**:
   - Use real-world or simulated case studies where students need to identify root causes, analyze data, and brainstorm solutions.
   - Group discussions encourage students to share different perspectives on solving complex problems.
4. **Problem-Solving Exercises**:
   - Provide structured problem-solving exercises where students can apply specific techniques, like fishbone diagrams or mind mapping.
   - Exercises encourage breaking down larger problems into smaller parts and analyzing each component systematically.
5. **Peer Collaboration and Brainstorming Sessions**:
   - Facilitate group brainstorming sessions where students can generate creative solutions for given problems.
   - Use ideation techniques like "brainwriting" or “round-robin” to ensure all students contribute to the discussion.
6. **Reflection and Self-Assessment**:
   - Encourage students to reflect on their problem-solving processes through self-assessment forms, evaluating their use of tools and identifying areas for improvement.

Resources

1. **Textbooks and Reference Materials**:
   - *Problem Solving 101* by Ken Watanabe or other introductory books on structured problem-solving approaches.

- Articles on systematic approaches to problem-solving, brainstorming methods, and case study analysis.

2. **Online Tools and Apps**:
   - **Lucidchart** or **Miro**: For creating flowcharts, fishbone diagrams, mind maps, and collaborative brainstorming boards.
   - **MindMeister**: A mind-mapping tool that supports idea generation and solution brainstorming.
3. **Case Study Repositories**:
   - Use real-world problem scenarios from resources like Harvard Business Review, open-access case studies, or current event news articles.
4. **Worksheets and Handouts**:
   - Printable worksheets on problem-solving techniques, including templates for the 5 Whys, fishbone diagrams, SWOT analysis, and mind mapping.
   - Self-assessment forms for students to evaluate their problem-solving strategies.
5. **Video Resources**:
   - **YouTube Videos or Online Lectures**: Videos on root cause analysis, brainstorming techniques, and real-life applications of problem-solving tools.
   - **TED Talks**: Talks on analytical thinking, problem-solving, and creative approaches to challenges (e.g., talks by Tony Fadell, Simon Sinek).

Devices

1. **Laptops/Tablets**:
   - For accessing online resources, creating digital mind maps, and working on collaborative platforms like Lucidchart or Miro.
2. **Projector/Interactive Whiteboard**:
   - For presenting case studies, step-by-step demonstrations of problem-solving tools, and brainstorming sessions with the entire class.

3. **Tablets or Smartphones**:
    - Useful for accessing mobile apps (e.g., MindMeister) or researching real-time examples during workshops.
4. **Whiteboard and Markers**:
    - For in-person brainstorming and mind mapping sessions. Whiteboards allow quick ideation and easy visualization of complex ideas.
5. **Flip Charts and Sticky Notes**:
    - For group brainstorming activities and root cause analysis exercises. Sticky notes help students easily add or rearrange ideas during sessions.

Description of the activity and Key Concepts

Description:

This activity will guide participants through problem-solving techniques essential for sustainable entrepreneurship, providing practical tools to identify challenges, analyzing them critically, and developing innovative, eco-friendly solutions that align with both business goals and environmental sustainability.

Upon completing this module, the student should be able to

1. Identify and Analyze Problems: Recognize and break down complex problems effectively.
2. Apply Analytical Thinking: Use critical thinking and logical reasoning to evaluate information.
3. Make Informed Decisions: Utilize data and analysis to make sound decisions.
4. Implement Problem-Solving Techniques: Apply practical tools and techniques to solve real-world problems.

Collaborate and Communicate: Work effectively with others to solve problems and make decisions.

Key concepts:

Problem Definition: Accurately identifying the real issue, not just its symptoms.

Root Cause Analysis: Using tools like the 5 Whys to dig deeper into the underlying causes of a problem.

Sustainable Solutions: Solutions that not only solve the problem but also align with long-term environmental, social, and economic goals.

Evaluation Criteria: Factors like cost, scalability, impact, and sustainability to assess potential solutions.

Assessment

Self-assessment, multiple choice quiz, case study analysis report, peer review & feedback.

Skills/Abilities developed

 Critical Thinking*: The capacity to deconstruct complex issues and examine their parts in a logical, organized manner.*

 Creative Problem-Solving*: Generating inventive, sustainable solutions that can adapt effectively to changing challenges.*

 Decision-Making*: Assessing various options using defined criteria to select the most suitable outcome for both business goals and environmental impact.*

 Action Planning*: Developing a structured, step-by-step strategy to execute chosen solutions effectively.*

Further readings, activities, materials, best practices

Readings, materials, best practices:

- *Problem Solving 101* by Ken Watanabe or other introductory books on structured problem-solving approaches.
- Morgan D., Jones. (1998). The Thinker's Toolkit: 14 Powerful Techniques for Problem Solving.

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SUB-MODULE TITLE 2.2
Problem-Solving Skills: Methods and tools for effective problem-solving
→ Skills: Problem-solving, analytical thinking, decision making

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CONTENT

- Module Summary
- Definition
- Key Components of Problem-Solving
- Essential Skills Developed
- Common Problem-Solving Methods
- 5 Primary Steps to Problem-Solving
- Challenges and Barriers
- Benefits of Effective Problem-Solving

Module Summary

Problem-solving skills are essential for identifying, analyzing, and resolving challenges efficiently. They combine analytical thinking and decision-making to evaluate situations, generate options, and implement effective solutions. Common methods include root cause analysis, brainstorming, and lateral thinking. Tools such as the 5 Whys, fishbone diagram, SWOT analysis, and decision matrices help structure thinking and prioritize actions. These skills are valuable in personal and professional settings, enabling individuals to approach problems logically, remain objective under pressure, and make informed choices. Developing strong problem-solving abilities enhances adaptability, promotes innovation, and supports continuous improvement in a wide range of contexts and industries.

Brief Definition

Problem-solving skills refer to the ability to identify challenges, analyze information, develop and evaluate potential solutions, and implement the most effective course of action. These skills involve logical thinking, creativity, and decision-making to resolve issues efficiently and effectively in various situations.

Key Components of Problem-Solving

- Identifying the Problem: Clearly define what the issue is. Misidentification can lead to ineffective solutions.
- Analyzing Root Causes: Look deeper into the origin of the problem using tools like the 5 Whys or Fishbone diagrams.
- Generating Possible Solutions: Brainstorm a wide range of ideas without judgment to foster innovation.
- Evaluating and Selecting the Best Solution: Consider feasibility, impact, resources, and risks before choosing a solution.
- Implementing and Reviewing: Put the chosen solution into action and assess its effectiveness, making adjustments as necessary.

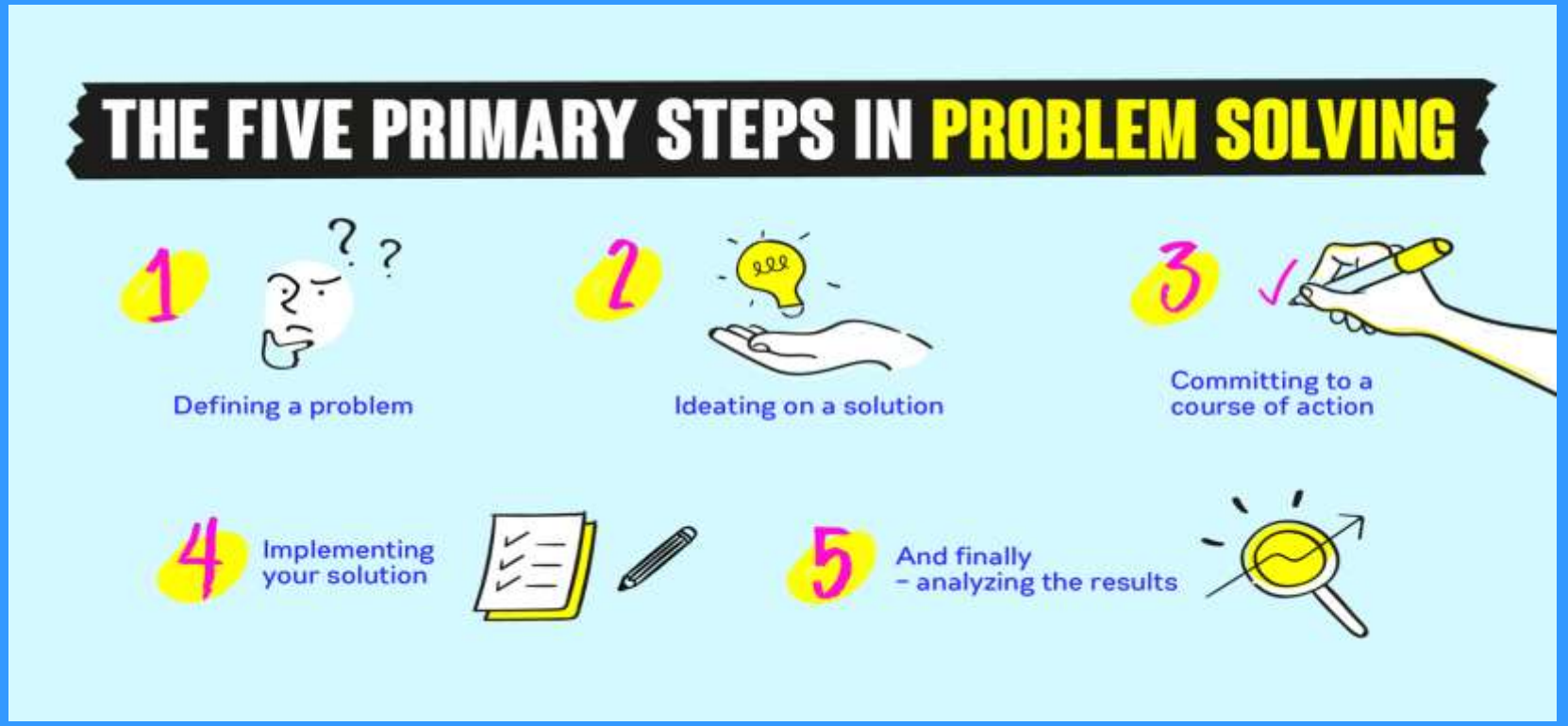
Essential Skills Developed

- Analytical Thinking: Ability to break down complex information into manageable parts and understand relationships.
- Creativity: Thinking outside the box to generate novel or unconventional solutions.
- Decision-Making: Weighing options based on logic, data, and consequences.
- Communication and Collaboration: Sharing ideas clearly and working with others to reach consensus and action.

Common Problem-Solving Methods

- Brainstorming: Generating a broad set of ideas in a group setting to encourage diverse thinking.
- Root Cause Analysis: Investigating deeper layers of a problem to find the core issue (e.g., 5 Whys, Fishbone/Ishikawa diagram).
- SWOT Analysis: Evaluating Strengths, Weaknesses, Opportunities, and Threats related to a problem or decision.
- Decision Matrix: A tool to compare multiple solutions based on a set of criteria for more objective decision-making.

5 Primary Steps to problem-solving



Problem-Solving

Challenges and Barriers

1. Cognitive Biases: Mental shortcuts or patterns that distort thinking, such as confirmation bias or anchoring.

2. Emotional Influences: Stress, fear, or overconfidence can cloud judgment.
3. Resource Constraints: Limited time, money, or information may restrict options.
4. Resistance to Change: People may hesitate to adopt new solutions or approaches

Benefits of Effective Problem-Solving

1. Improved Decision-Making: Leads to better, more informed choices.
2. Increased Efficiency: Reduces wasted time, effort, and resources.
3. Enhanced Innovation: Encourages creativity and out-of-the-box thinking.
4. Personal and Professional Growth: Builds confidence, resilience, and adaptability.

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Problem-Solving Skills: Methods and tools for effective problem-solving

Activity 2:

Duration: 2 hours

Specific Learning Objectives

1. **Develop Problem-Solving Skills:**
    - Understand the problem-solving process.
    - Identify and analyze problems effectively.
2. **Enhance Analytical Thinking:**
    - Apply critical thinking to evaluate information.
    - Use logical reasoning to break down complex issues.
3. **Improve Decision-Making Abilities:**
    - Make informed decisions based on data and analysis.
    - Evaluate the outcomes of decisions and adjust strategies accordingly.

Learning Outcomes:

Upon completing this module, the student should be able to

1. **Identify and Analyze Problems:** Recognize and break down complex problems effectively.
2. **Apply Analytical Thinking:** Use critical thinking and logical reasoning to evaluate information.
3. **Make Informed Decisions:** Utilize data and analysis to make sound decisions.
4. **Implement Problem-Solving Techniques:** Apply practical tools and techniques to solve real-world problems.
5. **Collaborate and Communicate:** Work effectively with others to solve problems and make decisions.

Description of the activity and Key Concepts

Activity: Brainstorming and Ideation Session

Description:

- In a brainstorming session, students practice generating creative solutions for a given problem using techniques like *brainwriting*, *round-robin brainstorming*, or *mind mapping*. One of the problems can be for participants to brainstorm innovative solutions to minimize food waste in cities, using techniques like brainwriting or mind mapping. They should consider strategies such as technology-based food-sharing apps, policy changes, community initiatives, or business incentives to tackle the issue creatively.
- The goal is to maximize the number of ideas generated without immediate critique, encouraging creativity and open thinking.
- After the initial brainstorming phase, students group similar ideas, discuss feasibility, and narrow down options to the most promising solutions.

Key Concepts:

- **Divergent Thinking**: Generating a wide range of ideas and possibilities without limiting creativity.
- **Brainstorming Techniques**: Structured approaches like brainwriting, round-robin, and mind mapping to encourage group participation.
- **Convergent Thinking**: Narrowing down and refining ideas to select the most effective solutions.

2 **Activity: Root Cause Analysis Workshop**

Description:

- Using the *5 Whys* method, they repeatedly ask "Why?" to dig deeper into the problem's underlying causes.
- Students then visualize their findings using a *fishbone diagram* (Ishikawa diagram) to organize causes into categories (e.g., people, processes, materials).
- Groups share their diagrams with the class, discussing their conclusions and possible solutions.

Key Concepts:

- **Root Cause Analysis**: Identifying the fundamental causes of a problem rather than just addressing symptoms.
- **5 Whys Technique**: A method of iterative questioning to uncover deeper causes.
- **Fishbone Diagram**: A visual tool to categorize potential causes, helping to structure problem analysis.

Methodology, Resources and Devices

Most appropriate methodology to apply

+ tools used: Links, books….

1. **Hands-On Workshops**:
    - Facilitate workshops where students work in groups to apply different problem-solving tools to specific scenarios.
    - Each group tackles a unique problem and presents their process and findings to the class.
2. **Guided Case Studies**:
    - Use real-world or simulated case studies where students need to identify root causes, analyze data, and brainstorm solutions.
    - Group discussions encourage students to share different perspectives on solving complex problems.

Assessment Methods

Students will be assessed through a variety of methods to evaluate their problem-solving skills, including **case study analysis**, **group projects**, **hands-on exercises**, **self-reflection**, and **quizzes**. Case studies require students to analyze real-world problems using frameworks like **root cause analysis or SWOT**, submitting detailed reports or presentations. Group projects involve identifying and solving local issues using structured techniques like **brainstorming and fishbone diagrams**, with assessments based on collaboration, method application, and presentation clarity.

Hands-on worksheets help students practice structured problem-solving through decision matrices and scenario-based exercises, ensuring accuracy and logical reasoning.

To reinforce learning, students engage in **self-assessment and reflection**, submitting papers on their problem-solving process, strengths, and areas for improvement. Quizzes test their grasp of theoretical concepts and practical applications, while structured rubrics, peer evaluations, and formative feedback ensure fair and effective grading. Reflection sessions allow for discussion and continuous improvement, integrating self-assessment to encourage accountability and deeper learning.

Specific Skills/Abilities developed

Problem-Solving: Structured approaches like the 5 Whys, mind mapping, or the fishbone diagram.

Analytical Thinking: Interpreting data, and diagnosing issues.

Decision Making: Weighing options and predicting potential outcomes.

Further readings, activities, materials, best practices

Problem Solving 101 by Ken Watanabe or other introductory books on structured problem-solving approaches.

Morgan D., Jones. (1998). The Thinker's Toolkit: 14 Powerful Techniques for Problem Solving.

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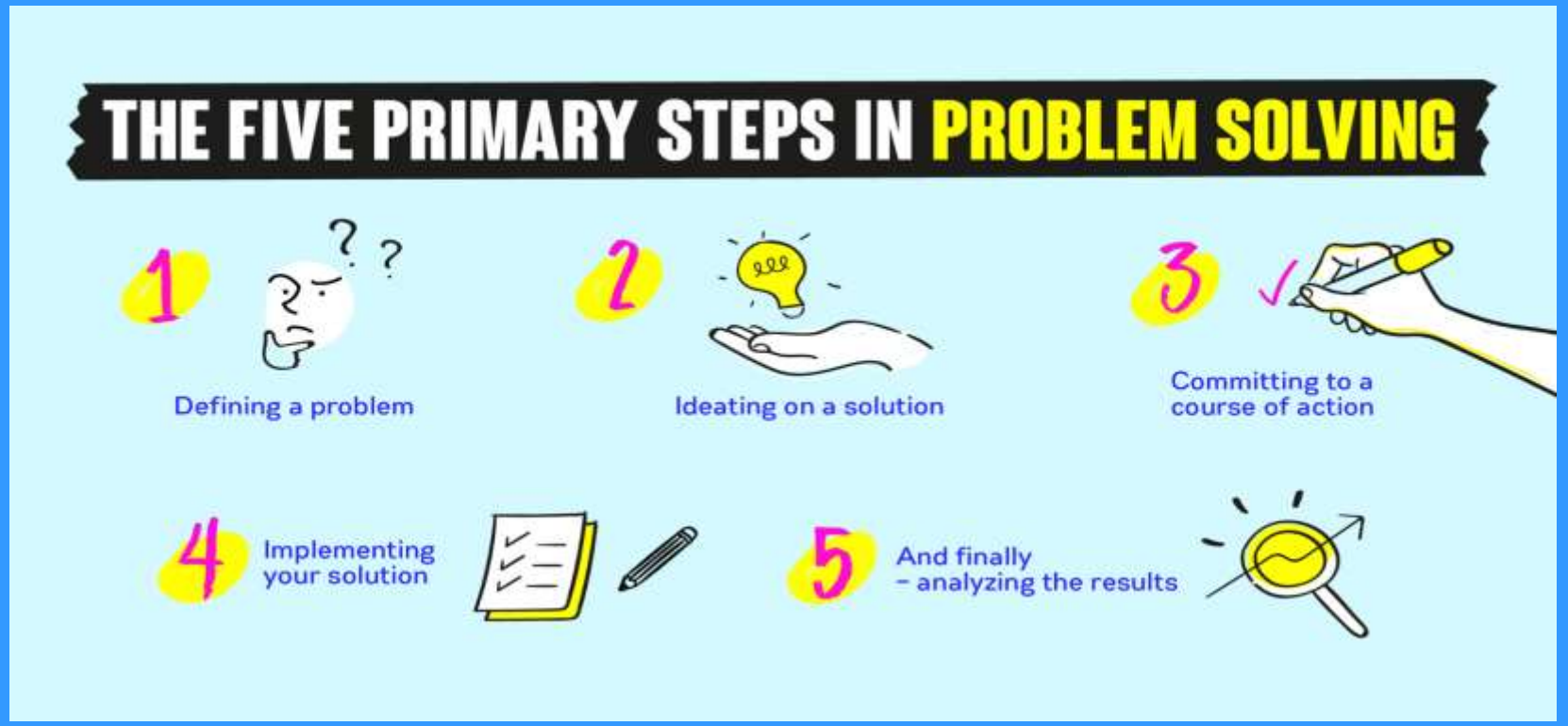
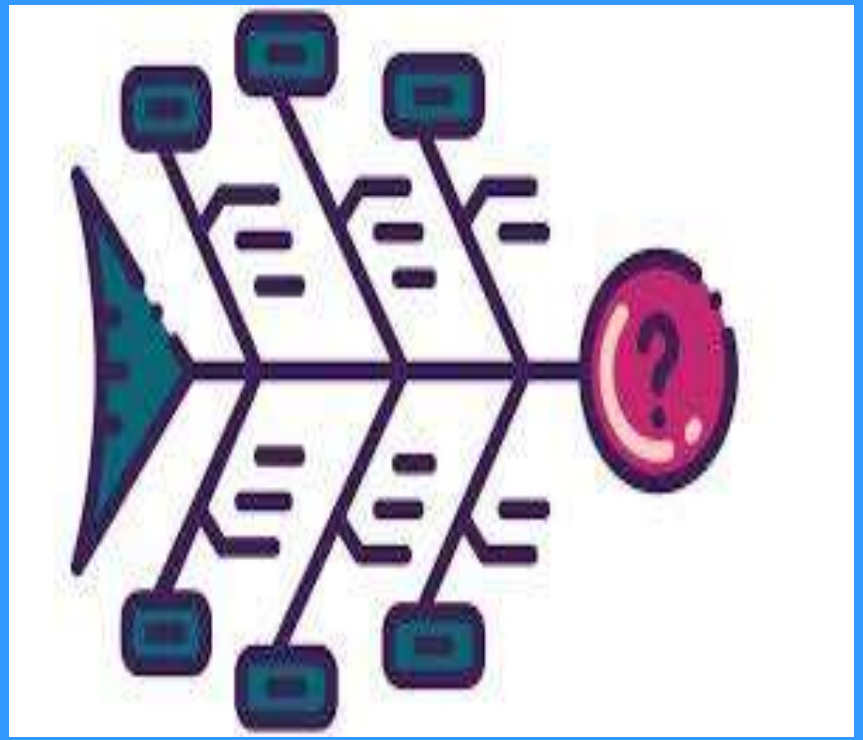
Sub-module 2

Problem-Solving Skills: Methods and tools for effective problem-solving



Problem-Solving Skills: Methods and tools for effective problem-solving

- Analyze real or simulated cases to identify root causes, interpret data, and develop solutions through group discussions.
- Apply techniques like fishbone diagrams or mind mapping to break down and systematically solve complex problems.
- Use peer brainstorming techniques to generate creative solutions and reflect on problem-solving processes for improvement.



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SUB-MODULE 2.3

Creative Thinking: ideation and innovation

→ **Skills:**

1. Creative thinking

Creative Thinking: ideation and innovation
Duration: 2 hrs
Activity 1 **Specific Learning Objectives** **Module Objectives** 1. **Develop Creative Thinking Skills:** • Understand the principles of creative thinking and innovation. • Learn techniques to generate and develop innovative ideas. 2. **Enhance Ideation Skills:** • Apply brainstorming, mind mapping, and other ideation techniques. • Foster a creative mindset and approach to problem-solving. 3. **Implement Innovation Strategies:** • Use design thinking to develop innovative solutions. • Apply creative thinking to real-world scenarios and projects.
Methodology, Resources and Devices **Methodology** 1. **Experiential Learning Workshops**: o Use hands-on workshops to introduce creative techniques like *mind mapping*, *brainwriting*, and *random association*. o Students work in groups to apply these techniques to real-world challenges, generating innovative solutions.

2. **Guided Brainstorming Sessions**:
    - Conduct structured brainstorming sessions to encourage divergent thinking.
    - Introduce methods such as *round-robin* brainstorming or *SCAMPER* (Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Reverse) to stimulate idea generation.
3. **Creative Challenges and Games**:
    - Use creativity games, such as *idea chaining* (where each new idea builds on the previous one) or *what-if scenarios* to encourage out-of-the-box thinking.
    - Gamified activities foster a relaxed environment, making it easier for students to explore unconventional ideas.
4. **Reflection and Feedback Sessions**:
    - After each activity, students reflect on their thought processes, sharing insights and discussing how they generated their ideas.
    - Guided reflection questions encourage students to recognize their creative strengths and identify areas for growth.
5. **Problem-Based Learning**:
    - Students are presented with open-ended problems and must apply creative thinking techniques to ideate solutions.
    - This activity encourages both divergent and convergent thinking, as students first generate ideas, then refine them into actionable solutions.

Resources

1. **Books and Articles**:
    - *A Whack on the Side of the Head* by Roger von Oech or *Creative Confidence* by Tom and David Kelley, both of which explore techniques and mindsets for stimulating creativity.

- Articles and case studies on innovative thinkers and organizations that employ creative problem-solving.
- organization.

2. **Videos and TED Talks**:
    - Videos on creative thinking, innovation, and divergent thinking (e.g., TED Talks by Sir Ken Robinson on creativity in education or Tom Wujec on the power of visualization).
    - *Think Like a Child* TED Talk and other creativity-related talks to inspire students to consider new perspectives.
3. **Creative Case Studies**:
    - Short case studies on innovative companies or inventors who have applied creative thinking to solve problems, such as 3M's invention of Post-it Notes or IDEO's design thinking process.

Devices

1. **Laptops/Tablets**:
    - For accessing online mind mapping tools and collaborative brainstorming platforms such as Miro and MindMeister.
    - Used for quick research on problem scenarios or for viewing videos and TED Talks.
2. **Projector/Interactive Whiteboard**:
    - Used for presenting brainstorming techniques, case studies, and visualizing mind maps during group activities.
    - Helpful for group-based creativity exercises where ideas are shared in real-time with the whole class.
3. **Whiteboard and Markers**:
    - Ideal for mind mapping exercises, random association brainstorming, and group creativity sessions.
    - Allows groups to visualize ideas quickly and make adjustments on the spot.

4. **Tablets or Smartphones**:
    - Useful for interactive activities where students use creativity apps, such as digital sticky notes or idea boards, and can contribute individually.
5. **Timer**:
    - Use for timed brainstorming sessions to encourage spontaneous idea generation and limit overthinking.
    - Encourages creativity under time constraints and simulates real-world creative thinking scenarios.

Description of the activity and Key Concepts

The activity is divided into four sections

Description:

- Students participate in a hands-on workshop focused on divergent thinking exercises. The session begins with a warm-up activity, such as listing as many unusual uses for a common object (e.g., a paperclip) as possible.
- Then, students apply the SCAMPER technique (Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Reverse) to generate creative solutions based on each prompt.
- Groups share their ideas, and the class discusses the most innovative or surprising solutions.

Key Concepts:

- Divergent Thinking: Generating a variety of ideas without limiting creativity; exploring multiple perspectives.
- SCAMPER Technique: A structured brainstorming tool that encourages out-of-the-box thinking by prompting students to view the problem from various angles.
- Creativity in Constraints: Learning to generate ideas within specific prompts or boundaries.

Activity: What-If Scenario Exercise

Description:

- Students engage in a “what-if” exercise by asking hypothetical questions related to a challenge e.g., “What if all energy were free?” or “What if classrooms had no walls?”.
- Groups develop solutions based on these scenarios, aiming to answer how the problem could be approached under these different circumstances.
- After presenting their ideas, students reflect on how the exercise changed their usual approach to problem-solving.

Key Concepts:

- What-If Thinking: Encouraging hypothetical scenarios to remove conventional limitations and foster creativity.
- Perspective Shifting: Challenging students to consider problems from new or unusual angles.
- Flexibility in Thinking: Adapting ideas to fit different, sometimes extreme, hypothetical contexts.

Assessment

assessment method and conduct

+ Self-assessment through questions at the end of submodules

+ Quiz – test your knowledge

+ group discussions

+ role play

+ case studies

+ reflective writing

Skills/Abilities developed

By the end of this module, participants will be able to:

1. Generate Innovative Ideas: Apply various ideation techniques to generate a wide range of ideas.

2. Develop Creative Solutions: Use creative thinking to develop innovative solutions to real-world problems.

Apply Design Thinking: Implement the design thinking process to enhance creativity and innovation.

Further readings, activities, materials, best practices

Online Courses and Webinars

- **Coursera - "Design Thinking for Innovation"** by the University of Virginia: Covers the fundamentals of design thinking for developing innovative solutions.
- **edX - "Entrepreneurship in Emerging Economies"** by Harvard University: Focuses on problem-solving in complex environments, ideal for fostering a global entrepreneurial perspective.

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2.3 Creative Thinking: ideation and innovation

→ ***Skills*: Creative thinking**

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CONTENT:

- Definition of Creative Thinking
- Importance of Ideation
- The Innovation Process
- Key Skills for Creative Thinking
- Techniques to Stimulate Creativity
- Barriers to Creativity
- Benefits of Creative Thinking and Innovation
- Practical tips how to apply creative thinking skills

Overview

Creative Thinking: Ideation and Innovation involves generating original ideas and transforming them into valuable solutions. It requires the ability to think beyond conventional patterns, explore possibilities, and embrace innovation. Key skills include imagination, open-mindedness, risk-taking, and problem reframing. Creative thinking drives progress in business, education, and personal development.

Definition

1. Creative thinking is the ability to look at problems or situations from a fresh perspective, often leading to unique or unorthodox solutions. It involves breaking away from traditional ways of thinking to generate new ideas, approaches, or insights.

Importance of Ideation

1. Ideation is the creative process of generating, developing, and communicating new ideas. It is the foundation of innovation. Through ideation, individuals or teams brainstorm a wide range of possibilities that can later be refined and developed into actionable solutions or products.

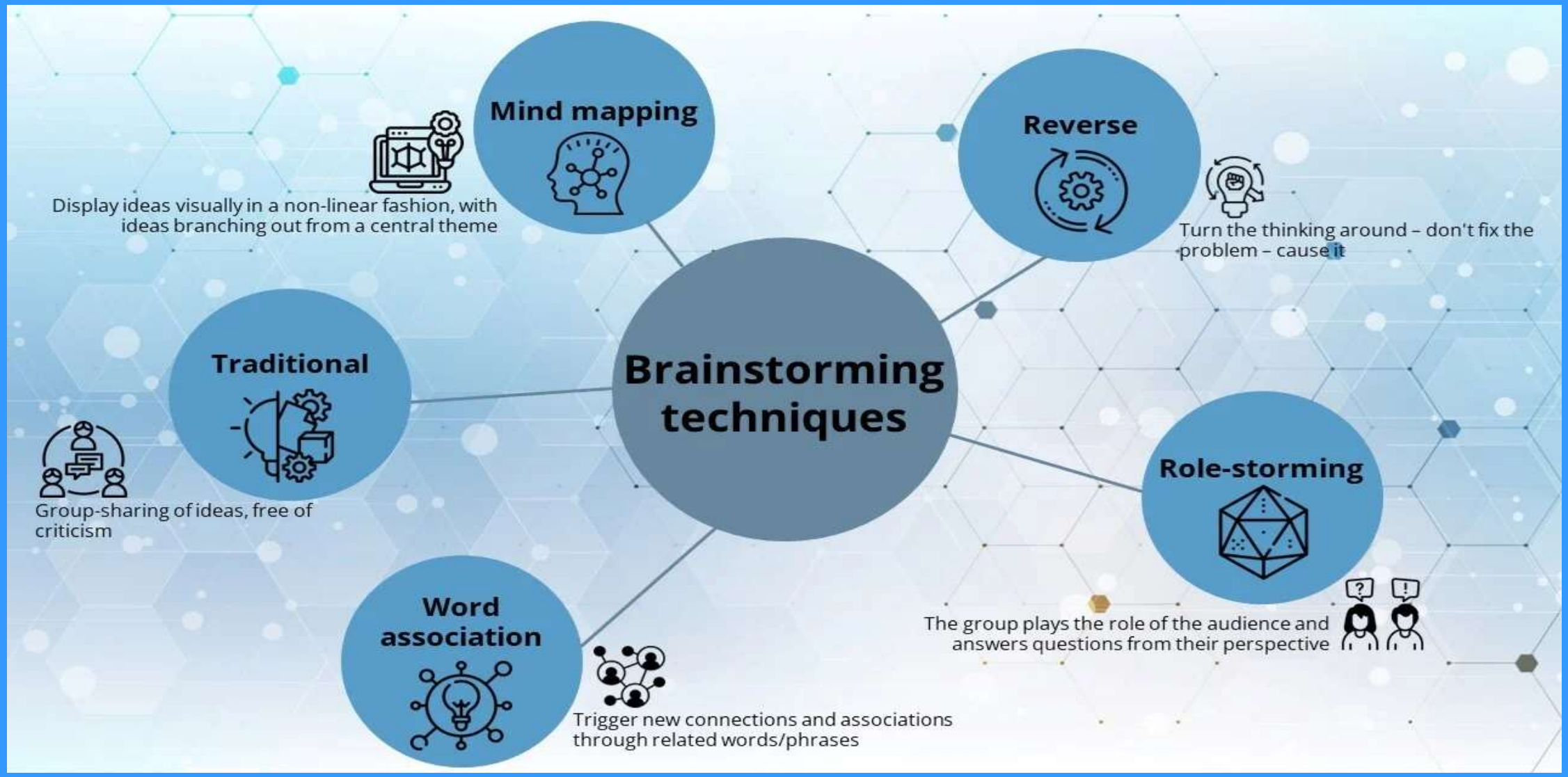
The Innovation Process

Innovation is the practical implementation of creative ideas that result in new or improved products, services, or processes. The process often includes:

- Idea Generation: Brainstorming and exploring creative solutions.
- Idea Evaluation: Assessing ideas based on feasibility, impact, and resources.
- Prototyping: Testing and refining ideas through models or pilot programs.
- Implementation: Bringing the solution to life and evaluating its success.

Sub module 3.

Creative Thinking: ideation and innovation



Techniques to Stimulate Creativity

- Use techniques like round-robin or SCAMPER to encourage diverse idea generation.
- Engage students with activities like idea chaining and what-if scenarios to promote innovative thinking.
- Encourage students to analyze their creative process, share insights, and identify areas for growth.
- Present open-ended problems where students generate and refine solutions using creative thinking techniques.

Barriers to Creativity

I. **Fear of Failure or Criticism:** Discourages risk-taking.
II. **Rigid Thinking:** Sticking to conventional methods or ideas.
III. **Lack of Time or Resources:** Limits exploration and experimentation.
IV. **Organizational Constraints:** Bureaucracy or hierarchical control may stifle creativity.

Benefits of Creative Thinking and Innovation

- **Competitive Advantage:** Differentiates products, services, or strategies.
- **Problem Solving:** Leads to innovative solutions for complex challenges.
- **Personal Growth:** Enhances confidence and cognitive flexibility.
- **Adaptability:** Helps individuals and organizations thrive in changing environments.

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Creative Thinking: ideation and innovation

Activity 2

Duration: 1 hour

Specific Learning Objectives

1. **Enhance Ideation Skills:**
    - Apply brainstorming, mind mapping, and other ideation techniques.
    - Foster a creative mindset and approach to problem-solving.
2. **Implement Innovation Strategies:**
    - Use design thinking to develop innovative solutions.
    - Apply creative thinking to real-world scenarios and projects.

Methodology, Resources and Devices

Most appropriate methodology to apply

1. **Reflection and Feedback Sessions**:
    - After each activity, students reflect on their thought processes, sharing insights and discussing how they generated their ideas.
    - Guided reflection questions encourage students to recognize their creative strengths and identify areas for growth.
2. **Problem-Based Learning**:
    - Students are presented with open-ended problems and must apply creative thinking techniques to ideate solutions.
    - This activity encourages both divergent and convergent thinking, as students first generate ideas, then refine them into actionable solutions.

Description of the activity and Key Concepts

2. Activity: Mind Mapping Session

Description:

- Each student creates a mind map based on a central concept, like “Innovation in Education” or “Improving City Spaces.” They branch out with related ideas, themes, and specific solutions.
- Working individually at first, students later join small groups of 10 to combine their mind maps into a larger one, highlighting overlapping ideas and identifying new themes that emerge from collaboration.
- The class discusses how mind mapping helped organize ideas and discover new connections.

Key Concepts:

- Mind Mapping: A visual tool for organizing thoughts, identifying patterns, and exploring new connections between ideas.
- Association and Grouping: Structuring and categorizing ideas visually to enhance understanding and innovation.
- Collaboration in Ideation: Sharing ideas with others to expand and refine initial thoughts.

3. Activity: Random Association Exercise

Description:

- Students are given random words or images and challenged to relate them to a given problem (e.g., finding ways to reduce energy consumption or improve online education). they can relate a **lighthouse** to the idea of using solar-powered streetlights
- For each random association, students must come up with three ideas that connect the unrelated item to the problem.
- Groups share their most creative ideas with the class, emphasizing how unusual associations can inspire innovation.

Key Concepts:

- Random Association: Using unrelated words or images as stimuli to generate new ideas and perspectives.

- Lateral Thinking: Thinking in unexpected or indirect ways to approach a problem.
- Breaking Mental Blocks: Disrupting traditional thought patterns to encourage fresh, innovative ideas.

4. Activity: Brainwriting for Silent Ideation

Description:

- Problem Statement: *"How can we make urban transport more eco-friendly?"* Each student writes down three ideas silently, such as solar-powered buses, bicycle-sharing stations, or carpool incentives.
- Idea Expansion: After a few minutes, papers are passed to the next person, who builds on the ideas—e.g., enhancing solar-powered buses with self-charging battery storage or making bike-sharing more accessible with free student memberships.
- Multiple Rounds: This process repeats for several rounds, gradually refining and expanding ideas—for example, adding AI-based traffic management to reduce congestion or suggesting green tax incentives for electric vehicle users.
- Final Discussion: Groups review the full set of ideas, identify the most promising ones, and discuss feasibility, selecting key concepts to develop into actionable solutions.

Key Concepts:

- Brainwriting: A brainstorming technique where ideas are written down, allowing all voices to contribute without the pressure of immediate feedback.
- Incremental Ideation: Building on others' ideas to refine and improve potential solutions.

Silent Collaboration: Encouraging quieter students to contribute and ensuring a range of diverse ideas.

Assessment

Assessment Methods

Students will be assessed through various creative thinking activities, including **portfolios, group presentations, reflection essays, quizzes, and peer assessments**. The **portfolio** showcases their creative growth through exercises like mind mapping and SCAMPER, while **group presentations** allow them to demonstrate their ideation process and problem-

solving techniques. Individual **reflection essays** encourage self-awareness by analyzing their creative journey, and **quizzes** test their theoretical understanding of creative methods. Peer assessments further enhance learning by fostering constructive feedback and collaboration.

To ensure fair and structured evaluation, assessments will use **clear rubrics**, **formative feedback**, and **reflective sessions**. Rubrics will outline criteria for originality, technique application, and reflection depth. Ongoing feedback will help students refine their ideas before final assessments. Flexible submission formats (digital or physical) and self-assessment tools will empower students to track their progress, promoting continuous improvement in creative thinking.

Skills/Abilities developed

1. Develop Creative Solutions: Use creative thinking to develop innovative solutions to real-world problems.

Apply Design Thinking: Implement the design thinking process to enhance creativity and innovation.

Creative Thinking: Generating new ideas, brainstorming, lateral thinking

Further readings, activities, materials, best practices

Online Courses and Webinars

- **Coursera - "Design Thinking for Innovation"** by the University of Virginia: Covers the fundamentals of design thinking for developing innovative solutions.
- **edX - "Entrepreneurship in Emerging Economies"** by Harvard University: Focuses on problem-solving in complex environments, ideal for fostering a global entrepreneurial perspective.

Incorporate Gamification Elements

- Use gamified elements, like timed challenges or point-based systems, in activities to make learning engaging and dynamic. This approach can increase motivation, especially in brainstorming or rapid ideation sessions.

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Creative Thinking: ideation and innovation

Random Association Exercise;

Students use random words or images to generate creative solutions to a given problem. They find unique connections, develop three ideas per association, and share their most innovative concepts, demonstrating how unexpected links can spark new ideas

Creative Thinking: ideation and innovation

Description of the activity and Key Concepts

- **Brainwriting for Silent Ideation: Students brainstorm ways to make urban transport eco-friendly. Each idea is passed around and built upon, adding refinements like self-charging buses or student bike-sharing programs. Ideas are further developed, incorporating innovations like AI traffic management or green tax incentives. Groups evaluate and select the most feasible solutions for further development.**

- **What-If Scenario Exercise; Students explore challenges through "what-if" scenarios, imagining solutions under hypothetical conditions. Groups develop and present ideas, then reflect on how this exercise shifted their problem-solving approach.**

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Submodule 2.4

Creativity and Critical Thinking Skills for an Entrepreneurial Mindset

→ **Skills:**

1. Creativity
2. Critical Thinking

Integrating Creativity and Critical Thinking for an Entrepreneurial Mindset
Duration: 2 Hours
Specific Learning Objectives 1. **Develop Creative Thinking Skills:** • Understand the principles of creative thinking and innovation. • Learn techniques to generate and develop innovative ideas. 2. **Enhance Critical Thinking Skills:** • Apply critical thinking to evaluate information and situations. • Use logical reasoning to break down complex issues. 3. **Foster an Entrepreneurial Mindset:** • Act on opportunities and ideas to create value for others. • Develop competencies for entrepreneurial action and value creation.
Methodology, Resources and Devices **Methodology** 1. **Project-Based Learning (PBL)** ○ Students engage in real-world projects where they identify a problem, generate ideas, and develop a solution or product. They use creativity to brainstorm solutions and critical thinking to refine and evaluate these ideas. ○ Key elements include *spotting opportunities*, *taking initiative*, and *planning actions*, as per the Entrecomp framework.

2. **Case Study Analysis**
    - Analyze case studies of successful entrepreneurs and startups to explore how they used creativity and critical thinking to address challenges and seize opportunities. Students identify the Entrecomp competencies demonstrated, like *managing resources* and *learning through experience*.
3. **Problem-Solving Workshops**
    - In guided workshops, students tackle entrepreneurial challenges (e.g., creating a sustainable product or a community-focused service) using techniques like *root cause analysis* and *brainstorming*. This allows them to practice structured thinking and creativity in developing innovative solutions.
4. **Role-Playing and Simulation**
    - Students role-play as entrepreneurs pitching their ideas to "investors" (their peers or instructors). This includes creating a business pitch that demonstrates creativity, strategic thinking, and resource management.

Resources

1. **Entrepreneurship Frameworks and Articles**
    - Provide articles or summaries on the Entrecomp framework to familiarize students with competencies like *self-awareness and self-efficacy*, *financial literacy*, and *ethical and sustainable thinking*.
    - Case studies or articles on entrepreneurial journeys and innovation.
2. **Online Creative and Strategic Tools**
    - **Business Model Canvas**: To help students structure their ideas into a tangible business model, focusing on key areas like value proposition, customer segments, and resources.
    - **SWOT Analysis** and **PESTLE Analysis**: To analyze the strengths, weaknesses, opportunities, and threats related to their business ideas, as well as environmental factors that impact their ideas.

3. **Video Resources**
    - Videos on entrepreneurial mindset topics, like *spotting opportunities* and *managing resources*, often available on platforms like TED or YouTube.
    - TED Talks on topics like innovation, creativity, and startup journeys (e.g., Simon Sinek's "Start With Why").

4. **Case Studies and Success Stories**
    - Case studies on real-world entrepreneurs, startups, and social enterprises that have used creativity and critical thinking effectively (e.g., Airbnb, Tesla).
    - Stories of small or local businesses that provide relatable examples of using an entrepreneurial mindset to solve community problems..

Devices

1. **Laptops/Tablets**:
    - For researching case studies, accessing online creativity tools, and building business models.
    - Using software like Miro or Canva for mind mapping, brainstorming, and developing presentations.
2. **Projector/Smart Board**:
    - For sharing videos, frameworks, or group presentations and visualizing business models and problem-solving frameworks in class.
3. **Whiteboard and Markers**:
    - Useful for collaborative brainstorming, SWOT analyses, and visualizing mind maps or business model canvases in real-time.
4. **Flip Charts and Sticky Notes**:
    - Essential for group brainstorming sessions, idea organization, and developing aspects of the business model in a physical, interactive way.

Description of the activity and Key Concepts

The session opens with an overview of the role of sustainability in entrepreneurship, showcasing successful Nigerian ventures such as solar power enterprises and companies using eco-friendly packaging. Participants are then introduced to a challenge: designing a sustainable solution to address water scarcity in Nigeria, while considering profitability, environmental responsibility, and community well-being. Working in groups, they generate innovative ideas, assess them for practicality, long-term viability, and market appeal. Each team presents their proposal, receives constructive peer feedback, and reflects on the role of creativity and critical thinking in solving entrepreneurial problems. The session wraps up with key insights and lessons learned.

Key Concepts:

- Sustainability in Business: Integrating environmental, social, and economic considerations into business models.
- Creative Problem-Solving: Using tools like brainstorming and mind mapping to generate fresh ideas.
- Critical Thinking: Analyzing assumptions, evaluating information, and forming sound judgments.
- Entrepreneurial Mindset: Embracing innovation, calculated risk-taking, and resilience

Assessment Methods

Students will be assessed through a Business Model Portfolio, Pitch Presentation, Quizzes, Reflection Essays, and Team Assessments, focusing on their ability to integrate creativity, critical thinking, and entrepreneurial competencies. The portfolio includes their Business Model Canvas, opportunity analysis, and brainstorming outputs, while the pitch presentation allows them to showcase their business idea to peers acting as “investors” for feedback. A quiz assesses their understanding of entrepreneurial concepts, and a reflection essay encourages self-awareness of their learning journey. Additionally, team assessments provide insights into collaboration and resource management skills.

Skills/Abilities developed

Creativity and innovation in addressing sustainability challenges.

Analytical skills to assess the feasibility of business ideas.

Collaborative problem-solving and teamwork.

Communication and presentation skills.

Further readings, activities, materials, best practices

Further Readings

1. **Books**
    - **"The Lean Startup" by Eric Ries**: Introduces lean principles for testing and iterating business ideas, promoting a fail-fast, learn-fast mentality.
2. **Articles and Papers**
    - **"Entrepreneurial Mindset Profile Technical Report" by Eckerd College**: Offers research-backed insights into the traits and competencies that shape an entrepreneurial mindset.

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

→ Skills:

- Creativity
- Critical Thinking

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CONTENT:

Brief Outline

Introduction to Entrepreneurial Mindset

An entrepreneurial mindset involves a set of attitudes and behaviors that drive innovation, resilience, and proactive problem-solving. It requires seeing opportunities where others see obstacles, taking initiative, and navigating uncertainty confidently

Role of Creativity in Entrepreneurship

Creativity fuels innovation by allowing entrepreneurs to envision new products, services, or solutions. It helps in:

- Identifying unmet market needs
- Designing unique value propositions
- Developing unconventional marketing strategies
- Adapting quickly to changing trends
- Creative entrepreneurs often spot gaps and invent ideas that challenge the status quo.

Importance of Critical Thinking in Business

Critical thinking involves evaluating information objectively to make reasoned decisions. It enables entrepreneurs to:

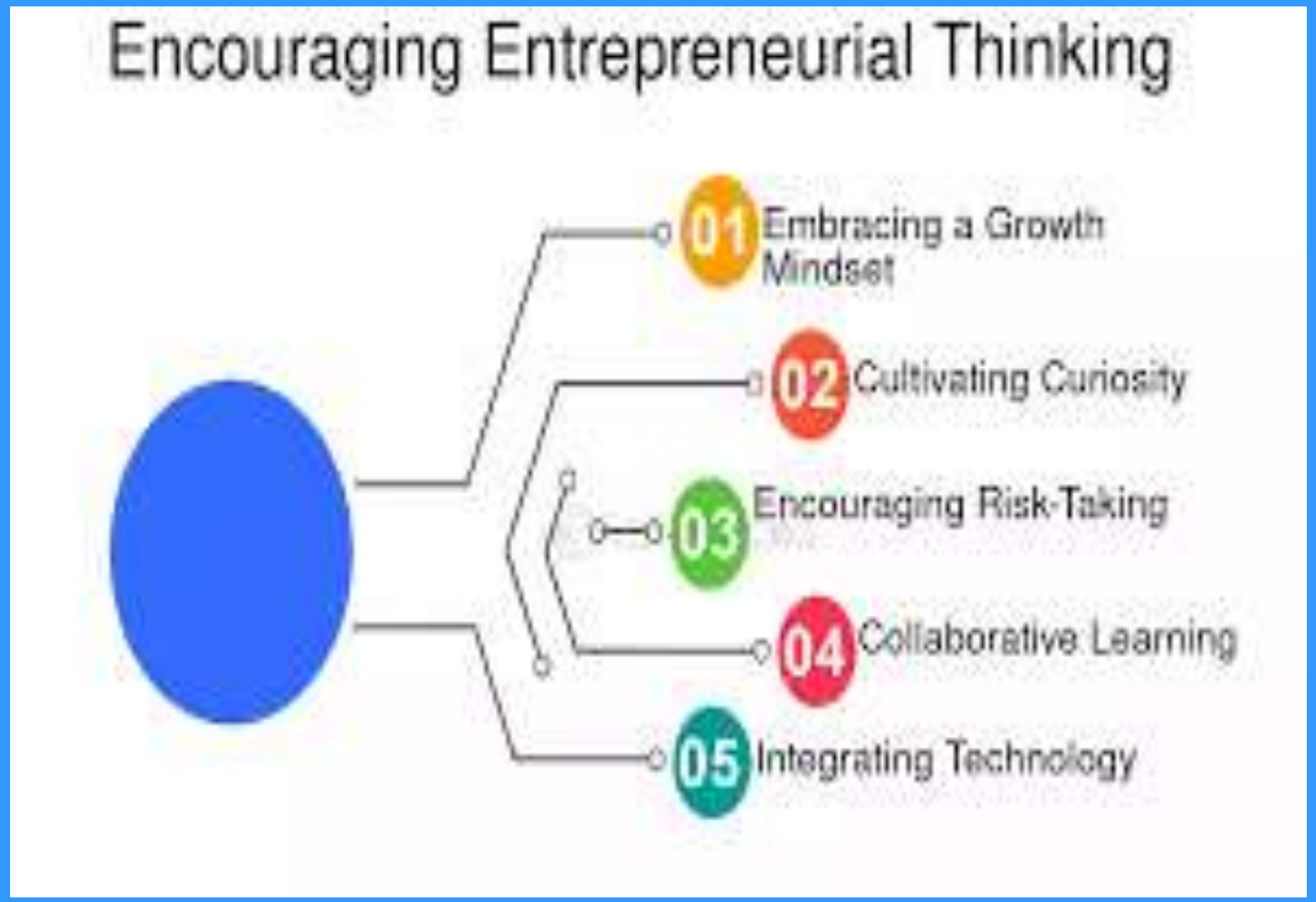
- Analyze market trends and data
- Assess risks and rewards
- Solve problems logically
- Make informed financial and strategic choices

It ensures that ideas are not just imaginative, but also practical and viable.

Key Techniques and Tools

- Mind Mapping: To visually explore ideas and connections.
- SWOT Analysis: For critical evaluation of ideas.
- Design Thinking: A human-centered approach combining both skills.
- Scenario Planning: Assessing multiple outcomes of a decision.
- Six Thinking Hats: Encouraging different perspectives in team settings.

Integrating Creativity and Critical Thinking for an Entrepreneurial Mindset



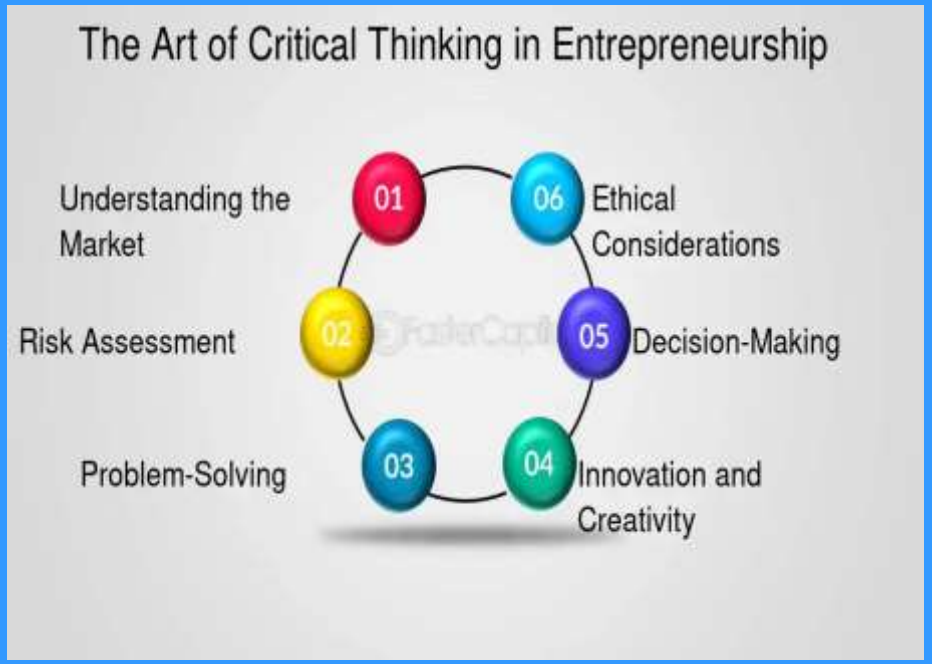
Creativity in Entrepreneurship: Encourage innovative thinking to develop unique ideas and solutions.

Critical Thinking Skills: Analyze challenges, evaluate opportunities, and make informed business decisions.

Integrating Creativity and Critical Thinking for an Entrepreneurial Mindset

- **Project-Based Learning:** Students identify problems, brainstorm creative solutions, and refine ideas using critical thinking, following the Entrecomp framework.

- **Case Study Analysis:** Examine successful entrepreneurs to understand how they applied creativity, resource management, and strategic decision-making.



Integrating Creativity and Critical Thinking for an Entrepreneurial Mindset

- **Problem-Solving Workshops:** Apply structured techniques like root cause analysis and brainstorming to tackle entrepreneurial challenges.
- **Role-Playing & Reflection:** Pitch business ideas in simulations, then reflect on key competencies like initiative, teamwork, and opportunity recognition.

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Integrating creativity and critical thinking skills for Entrepreneurial mindset

Activity 2

Duration: 1 hour

Specific Learning Objectives

1. **Enhance Critical Thinking Skills:**
    - Apply critical thinking to evaluate information and situations.
    - Use logical reasoning to break down complex issues.
2. **Foster an Entrepreneurial Mindset:**
    - Act on opportunities and ideas to create value for others.
    - Develop competencies for entrepreneurial action and value creation.

Methodology, Resources and Devices

Most appropriate methodology to apply

+ tools used: Links, books….

1. **Problem-Solving Workshops**
    - In guided workshops, students tackle entrepreneurial challenges (e.g., creating a sustainable product or a community-focused service) using techniques like *root cause analysis* and *brainstorming*. This allows them to practice structured thinking and creativity in developing innovative solutions.
2. **Role-Playing and Simulation**
    - Students role-play as entrepreneurs pitching their ideas to “investors” (their peers or instructors). This includes creating a business pitch that demonstrates creativity, strategic thinking, and resource management.

Description of the activity and Key Concepts

Activity: Opportunity Spotting Challenge

Description:

- Students work in small groups to identify potential business opportunities within a specific theme or industry, such as sustainable products, digital services, or community-based solutions.
- Each group uses *SWOT analysis* to evaluate the feasibility and uniqueness of their identified opportunities, looking at potential strengths, weaknesses, opportunities, and threats.
- Groups present their top three ideas to the class, explaining why these opportunities are viable and what differentiates them in the market.

Key Concepts:

- Opportunity Spotting: Identifying gaps, needs, or problems that could lead to potential business ideas.
- SWOT Analysis: Structuring evaluation through strengths, weaknesses, opportunities, and threats to assess idea feasibility.
- Entrecomp Competency - Spotting Opportunities: Encourages students to identify possibilities where they can create value.

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2. Activity: Business Model Canvas Workshop

Description:

- Each group develops a simple business model for one of their ideas, covering aspects like value propositions, customer segments, revenue streams, and resources needed.
- Students map out each element on a canvas, refining it as they receive feedback from peers and instructors.
- Groups present their completed canvases and explain how their model meets the needs of their target customers and aligns with their chosen opportunity.

Key Concepts:

- Business Model Canvas: A strategic tool that visually outlines the key components of a business model.
- Value Proposition: Clarifying the unique benefits the product or service offers to customers.

- Entrecomp Competencies - Creativity and Planning and Management: Applying creativity in planning and organizing resources to shape a viable business concept.

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3. Activity: Entrepreneurial Problem-Solving Workshop

Description:

- Using techniques like *root cause analysis* and *brainstorming*, students generate multiple solutions. Then they apply critical thinking to evaluate and narrow down options based on feasibility, cost, and impact.
- Groups share their refined solution, discussing the thought process and techniques used to arrive at their conclusion.

Key Concepts:

- Problem-Solving Techniques: Structured approaches, such as root cause analysis, to identify underlying problems and generate solutions.
- Convergent and Divergent Thinking: Balancing creative ideation (divergent) with evaluation and refinement (convergent).
- Entrecomp Competency - Taking Initiative: Encourages students to actively pursue and refine their ideas with actionable steps.

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4. Activity: Pitching and Feedback Session

Description:

- Each group prepares an elevator pitch of their business idea, including a description of the problem, the solution, the target audience, and how their product or service stands out.
- Pitches are presented to classmates who act as “investors,” providing feedback on clarity, feasibility, and marketability.
- After the feedback session, students refine their pitches based on insights gathered, improving their communication and persuasion skills.

Key Concepts:

- Pitching: Communicating business ideas clearly and persuasively to potential stakeholders.

- Constructive Feedback: Using peer feedback to identify areas for improvement and enhance ideas.
- Entrecomp Competency - Mobilizing Resources and Working with Others: Collaborating and adapting ideas based on input, showing resourcefulness.

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5. Activity: Reflection on Entrepreneurial Skills

Description:

- After completing the module, students write a reflection on their experience. They assess which Entrecomp competencies (e.g., spotting opportunities, taking initiative, managing resources) they found most valuable and which they would like to strengthen.
- Students identify specific strategies they plan to apply in the future to develop an entrepreneurial mindset, such as learning through experience or enhancing their creative problem-solving skills.

Key Concepts:

- Reflection and Self-Assessment: Developing awareness of one's strengths and areas for improvement.
- Growth Mindset: Recognizing entrepreneurial skills as learnable and improvable with practice and reflection.
- Entrecomp Competency - Learning Through Experience: Reflecting on experiences to improve skills and readiness for future opportunities.

Key Concepts Summary

- Entrecomp Competencies: The module focuses on developing an entrepreneurial mindset through key competencies like *spotting opportunities*, *taking initiative*, *mobilizing resources*, and *learning through experience*.
- Creativity and Critical Thinking Integration: Students apply creative thinking to ideate and critical thinking to evaluate and refine their ideas, balancing innovation with practicality.
- Problem-Solving Tools: Techniques like *SWOT analysis*, *root cause analysis*, and the *Business Model Canvas* give students structured ways to develop and assess business ideas.
- Real-World Application and Reflection: Students are encouraged to approach problems as entrepreneurs would, integrating creativity, analysis, and

reflection to understand the holistic process of idea development and execution.

Assessment

Students will be assessed through a Business Model Portfolio, Pitch Presentation, Quizzes, Reflection Essays, and Team Assessments, focusing on their ability to integrate creativity, critical thinking, and entrepreneurial competencies. The portfolio includes their Business Model Canvas, opportunity analysis, and brainstorming outputs, while the pitch presentation allows them to showcase their business idea to peers acting as “investors” for feedback. A quiz assesses their understanding of entrepreneurial concepts, and a reflection essay encourages self-awareness of their learning journey. Additionally, team assessments provide insights into collaboration and resource management skills.

To ensure structured and fair evaluation, clear rubrics, peer assessment training, and formative feedback opportunities will be provided. Regular check-ins and self-assessment prompts will guide students in refining their work. Flexible submission formats will accommodate different creative approaches, while structured reflection sessions will help deepen their understanding of entrepreneurial competencies and teamwork dynamics.

Skills/Abilities developed

Entrepreneurial Mindset (Entrecomp Framework): Opportunity identification, risk management, resilience, and initiative.

Further readings, activities, materials, best practices

Further Readings

1. **Books**
    - **"The Lean Startup" by Eric Ries**: Introduces lean principles for testing and iterating business ideas, promoting a fail-fast, learn-fast mentality.
    - **"Creative Confidence" by Tom Kelley and David Kelley**: Offers insights into fostering creativity within business and entrepreneurship, helping students break through common barriers to innovation.
    - **"Thinking, Fast and Slow" by Daniel Kahneman**: Explores human decision-making processes, providing useful insights into critical

thinking, biases, and rational versus intuitive approaches to problem-solving.

2. **Articles and Papers**
    - **"Entrepreneurial Mindset Profile Technical Report" by Eckerd College**: Offers research-backed insights into the traits and competencies that shape an entrepreneurial mindset.
    - **"The Entrecomp Framework" by the European Commission**: A detailed guide to Entrecomp, covering competencies like opportunity recognition, risk management, and taking the initiative.
    - **Harvard Business Review Articles on Innovation and Entrepreneurship**: Articles such as “How Successful Entrepreneurs Manage Uncertainty” provide real-world examples of entrepreneurship in action.

Additional Activities

1. **Customer Persona Development**
    - **Description**: Students create detailed customer personas based on a chosen target market, using interviews, surveys, or research to develop a clear profile of potential users.
    - **Objective**: Enhance empathy and better understand customer needs, motivations, and pain points, which drives innovative, user-centered solutions.
2. **"What If?" Scenario Planning**
    - **Description**: Students engage in “What If?” exercises, considering various market changes, such as new regulations, environmental factors, or technological advancements. They explore how these shifts could impact their business model and brainstorm adaptive strategies.
    - **Objective**: Practice critical thinking and flexibility in response to hypothetical challenges, preparing students to manage risk and uncertainty.
3. **Reverse Brainstorming**
    - **Description**: In groups, students brainstorm ways to make their idea fail, identifying potential pitfalls or challenges. They then work backward to identify strategies to avoid these risks.

- **Objective**: Develop risk assessment skills and foster critical thinking by looking at solutions from a problem-centric perspective.

4. **Rapid Ideation Sprints**
    - **Description**: Time-boxed brainstorming sessions where students quickly generate as many ideas as possible for a given problem without judgment, followed by a short evaluation period to refine concepts.
    - **Objective**: Encourage spontaneous creative thinking, reduce overthinking, and push students to explore diverse ideas in a structured but creative environment.

Materials

1. **Mind Mapping and Brainstorming Tools**
    - Digital tools like **Miro** or **MindMeister** for mind mapping and brainstorming are ideal for collaborative online or in-class activities, helping students organize and expand their ideas visually.
2. **Business Model Canvas Templates**
    - Templates (available digitally or as printed worksheets) allow students to map out key business model components, fostering a structured approach to planning.
3. **Entrepreneurial Toolkits**
    - **Entrecomp Playbook**: Includes worksheets, activity templates, and case studies focused on developing entrepreneurial competencies.
    - **IDEO Design Kit**: A free online toolkit that introduces students to human-centered design approaches and provides templates for empathy mapping, ideation, and prototyping.
4. **Simulation Platforms**
    - **GoVenture** or **SimVenture**: Business simulation tools that allow students to practice decision-making, resource management, and risk assessment in a safe, virtual environment.

Best Practices

1. **Encourage Iteration and Feedback Loops**

- Build frequent, structured feedback sessions and encourage students to view each feedback point as a chance to iterate and improve. This reinforces the entrepreneurial value of continuous improvement and resilience.

2. **Promote Diverse Thinking Styles**
    - Design activities that incorporate both convergent and divergent thinking phases, like brainstorming sessions followed by analytical evaluations. This balance helps students appreciate both ideation and practicality.
3. **Use Real-World Case Studies Regularly**
    - Integrate real-world examples, including startup successes and failures, to provide context and relatability. Case studies help students see how abstract concepts apply to actual business situations.
4. **Facilitate Peer Learning and Collaboration**
    - Encourage group-based problem-solving and peer feedback to simulate real-world teamwork. Collaborative exercises like group brainstorming, feedback rounds, and team reflections enhance interpersonal skills and collective creativity.
5. **Encourage Reflective Practices**
    - Have students maintain a reflection journal throughout the module to track their thoughts, progress, and learning milestones. Structured reflection encourages self-awareness, fostering a mindset focused on growth and improvement.

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

Integrating Creativity and Critical Thinking for an Entrepreneurial Mindset

Description of the activity and Key Concepts

- Opportunity Spotting Challenge: Students collaborate to identify business opportunities, assess feasibility using SWOT analysis, and present their top ideas with market differentiation.

- Business Model Canvas Workshop: Groups create and refine a business model, mapping key elements on a canvas, incorporating feedback, and presenting how it meets customer needs.

- Entrepreneurial Problem-Solving Workshop: Students brainstorm solutions, assess feasibility using critical thinking, and present their refined ideas with a discussion on their decision-making process

Integrating Creativity and Critical Thinking for an Entrepreneurial Mindset

Description of the activity and Key Concepts

- Pitching and Feedback Session: Groups create and present an elevator pitch for their business idea, receive feedback from "investors," and refine their pitches to enhance communication and persuasion.

- Reflection on Entrepreneurial Skills: After the module, students reflect on valuable Entrecomp competencies, identify areas for growth, and plan strategies to further develop an entrepreneurial mindset.

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