

# SDG12 Future of Innovation and Enterprise

## MM5: Introduction to Engineering for Good



### Micro-Module 5: Introduction to Engineering for Good

### Exploration and Experimentation

### Lesson 10: Innovation 1

**Subjects: Applied  
Technology, Climate  
Action and Sustainable  
Development, Digital  
Literacy, Technology**

### Lesson Title and Summary: Innovation

Innovation refers to the creation, development, and implementation of new ideas, processes, products, or services that bring about significant positive change or improvement. It involves the application of creativity, originality, and problem-solving to address challenges or meet needs in a novel and more effective way.

Innovation 1 aims to show the value of all ideas and remove the idea of failure in innovation.

**Vocabulary: Innovation, Agile thinking;  
Collaboration; Idea Generation; Ideation,  
Iteration; Remix**

### In this lesson, the learner will...

- develop their understanding of the concept of innovation
- develop their understanding of the different types of innovation
- learn how to ideate effectively
- work collaboratively with peers on an ideation

### Materials:

- Teachers' Guide
- Notebooks
- Pen / Pencil



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## L10: Innovation 1



### Activity Instructions

#### Activity 1: Innovation: An Introduction (15min)

1. Think/Pair/Share
  - What does 'innovation' mean?
  - What are different ways that people and companies might innovate?
  - Why is it important to keep innovating?
2. Mind map ideas as a whole class on the board, poster paper or on a digital document. See Teachers' Guide for support.

#### Activity 2: Worst Idea Ever! (25min)

1. Ask learners to work in small groups.
2. They are going to think up the worst ideas for companies, products or services they can imagine (see Teachers' Guide for examples). Encourage crazy ideas! Allow 5 minutes for brainstorming.
3. Create a collaborative list on the board of all the worst ideas. Ask each group to share 2-3 examples each.
4. Ask each group to select 1-2 of the ideas on the board to now turn into good idea. Encourage them to use the actual bad idea for a beneficial use. Discourage inversions (i.e. glasses that make your vision worse (bad) = glasses that make your vision better (good)). Instead, ask them to find an actual use for glasses that make your vision worse.

#### Activity 3: Reflection (10min)

1. Add the good ideas to the collaborative list on the board. Encourage discussion and debate of each idea:
  - Discuss some of the ideas that have been generated.
  - Why was the task easy or difficult?
  - How could you use this method with other activities

#### Reflective Exercise: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks
- Two things they found most interesting and would like to explore more
- One opinion they have about the tasks

Use Post-its or a mentimeter survey - [www.mentimeter.com](http://www.mentimeter.com) - to gather reflections

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### Extension / Reduction Activities

Reduction: For a shorter class, reduce timing of Activities 1 & 2. Ask learners to provide less examples.

Extension: For a longer class, extend discussion time around the process.

Additional Task:

Introduce the concept of 'open source' by watching Video: What is open source explained by Lego [4:04min]

How can open source be used in engineering to better society?

Research the open source projects using the videos in the Media Box.

Follow up with all group feedback on each video / project.

### Media (materials, online video links, extra resources, case studies etc)

What is open source explained by Lego [4:04min] <https://www.youtube.com/watch?v=a8fHgx9mE5U>

Open-source culture [1:10min] <https://www.youtube.com/watch?v=gobBQwtFeyk>

Crispr Gene Editing [4:22min] <https://www.youtube.com/watch?v=1VaG3DpFXjs>

Open Source Aquaponic Greenhouse [3:45min] <https://vimeo.com/141252002>

Open Source Ventilator <https://opensourceventilator.ie/>

### Local Tips / Expertise / Additional Work and Assessments

Invite local entrepreneurs to talk and to help facilitate Worst Idea Ever

Organise a virtual talk from the innovation department of a technical school, lab or university

- UCD Innovation Academy <https://www.innovationacademy.ie/>
- Portal <https://www.tcd.ie/portal/>
- NUIG <http://whitakerinstitute.ie/>
- <https://ucc.edu.jm/innovation/>



What does 'innovation' mean?

Innovation refers to the process of introducing something new or making significant improvements to existing ideas, products, processes, or methods.

It involves the creation, development, and implementation of novel concepts, solutions, or approaches that result in positive change.

What are different ways that people and companies might innovate?

- Product Innovation: Apple's iPhone
- Process Innovation: reducing waste
- Business Model Innovation: Netflix (subscription-based streaming)
- Technological Innovation: Tesla's Electric Vehicles
- Service Innovation: Uber's Ride-Sharing Platform
- Social Innovation: Go Fund Me
- Medical Innovation: Gene editing technology
- Educational Innovation: Online Learning platforms
- Environmental Innovation: solar energy roof panels for homes
- Communication Innovation: WhatsApp

Why is it important to keep innovating?

- Competitive Advantage
- Adaptation to Change
- Economic Growth
- Efficiency and Productivity
- Problem Solving
- Customer Satisfaction
- Risk Management
- Global Impact
- Job Creation
- Continuous Learning

### **Worst Idea Ever!**

The "Worst Idea Ever" game is a creative exercise where participants generate intentionally bad or impractical ideas for a given prompt. The goal is to encourage out-of-the-box thinking and humor. Here are some examples of prompts and the "worst" ideas for each:

- A restaurant where the chefs only cook with expired ingredients.
- A roller coaster where the seats rotate 360 degrees independently of the track, ensuring that riders have no idea which way is up or down.
- An app that sends you fake compliments from fictional admirers to boost your self-esteem, but it also shares your embarrassing moments on social media without your consent.
- An inflatable dartboard that kids can wear as a backpack, encouraging them to play a game of darts while running around.
- A chocolate teapot