SDG 9 Future of Space

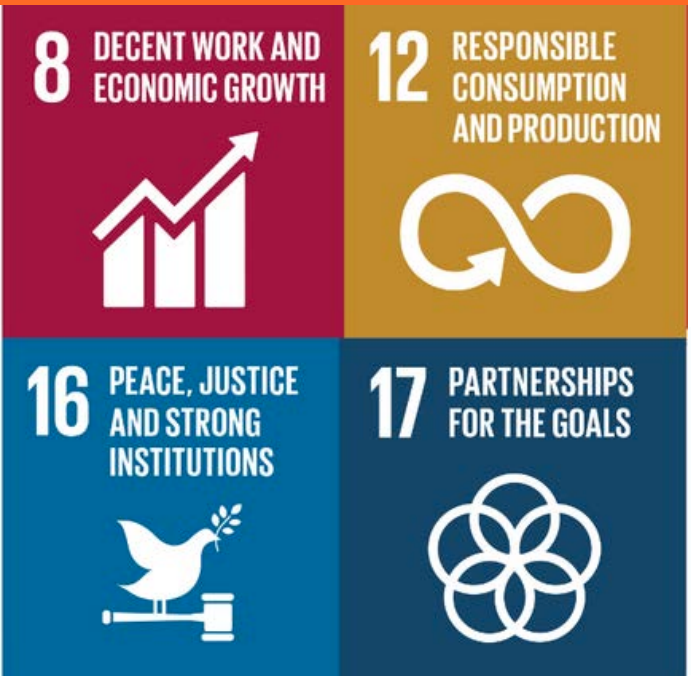
Micro Module 7: Problem to Pitch - Space Design

MM7: Problem to Pitch Space Design

Phase 3: Implementation

Lesson 5 Design Thinking Stage 3 Ideate 2.0

Subject Areas: Art and Design, CPSE, Climate Action and Sustainable Development, Engineering, Technology, SPHE



Lesson Title and Summary: Design Thinking Stage 3 Ideate 2.0

This lesson builds on lesson 4 and enables students to develop an understanding of the importance of developing ideas and looking for opportunities to iterate and improve upon existing concepts. Learners are encouraged to view ideas as flexible, evolving processes rather than fixed solutions.

Learners are introduced to open-source concepts, such as iteration and collaboration, which emphasise the value of sharing, refining, and building on the ideas of others. To further stimulate creative thinking, students engage in the "Worst Idea Ever" exercise, where they intentionally brainstorm the worst possible ideas.

This helps break down mental barriers, allowing learners to explore new, unconventional approaches and identify opportunities for innovation in even the most unexpected ideas.

Vocabulary: Beta-test, Focus Group, Lean Canvas, Open Source, Refine

In this lesson, the learner will:

- explore how to evolve ideas
- consider opportunities to improve ideas
- feel comfortable with exploring experimental approaches
- develop skills around idea generation
- learn to transfer and apply skills

Materials:

- Teachers Guide: Worst Idea Ever
- Worksheet: LEAN Canvas
- Paper
- Pens, Pencils

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Activity Instructions

Activity 1 Worst Idea ever – Rapid Response (20 mins)

1. Explain the activity – learners will work in their groups to come up with 8 - 10 examples of the worst ideas ever.
2. These will then be swapped amongst the groups to be transformed in activity 2
3. Give some some real-world starting ideas e.g. a chocolate teapot – see Teacher's guide
3. After 15 minutes ask students to share one or two of their worst ideas ever

Activity 2 Transforming Ideas – Rapid Response (20 mins)

1. Gather up the sheets from the groups and begin to swap them with other groups
2. Give some examples of a transformation of a worst idea into a good idea - Teacher's Guide
3. Give students 15 mins to transform the examples on the sheets into good ideas

Activity 3 Generating and Remixing Ideas – Rapid Response (10 mins)

1. Discuss some of the ideas that have been generated?

- What did the students notice about the process?
- Where they surprised at how hard / easy the task was?
- Which activity did they find easier?
- Can they see how they might use this method with other skills?

2. Use the activity to introduce key ideas of open source – ideas development and iteration.
3. Watch the Open Source As Explained by Lego video (see media box)
4. Ask the students to think about this for the next class

REFLECTIVE EXERCISE: 3-2-1

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

Use Post-its or a mentimeter survey - www.mentimeter.com - to gather reflections

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EXTENSION / REDUCTION ACTIVITIES

Reduction: For a shorter class, undertake activity 1 and 2 with less examples e.g. 4 – 6 of worst / transformed ideas.

Extension: For a longer class, undertake an empathy map and Remix SWOT analysis of some of the ideas for some of the ideas - see lesson 4 resources.

The open source discussion can also be extended using - Elements of Open Source Space - see media box. Learners could also complete a LEAN canvas for one of the open source projects

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

What is open source explained by Lego [4:40 mins] https://www.youtube.com/watch?v=a8fHgx9mE5U

Consensys Space https://www.consensys.space/

Elements of the Open Source Space Ecosystem https://www.opensourcesatellite.org/elements-open-source-space-ecosystem/

Animation Explaining Open Source Culture for [open source] [1:09 min] https://www.youtube.com/watch?v=gobBQwtFeyk

Ireland's Space Industry Directory (with ESA) https://www.enterprise-ireland.com/en/supports/become-more-innovative/space-esa-homepage/esa-directory

Local Trip / Expertise / Additional Work and Assessments

Invite a representative from one of the companies in tIreland's Space Industry directory to speak to the class could discuss Ireland's role in the European Space Agency (ESA), the types of projects Irish companies work on, and opportunities for students in the space sector. Learners can develop questions before the visit, and after the talk, they submit reflective writing or short report - See Supporting Skills www.muinincatalyst.com on how Ireland is contributing to global space exploration.

Learners could research Ireland's role within the European Space Agency (ESA) using the ESA Directory and other resources, focusing on a particular aspect of Ireland's space contributions (e.g., materials science, satellite technology, or space communications) and how Irish companies collaborate with the ESA.

MM7 L5TG WORST GAME EVER SUPPORT SHEET

The session is an iteration of the 'Worst Possible Idea' a term coined by author, president and co-founder, Bryan Mattimore, The Growth Engine Company LLC.

As a facilitation tool for ideation, the 'Worst Possible Idea' (WPI) turns the process of developing ideas upside down. Rather than having the pressure of coming up with novel or innovative ideas, WPI facilitates agile creative thinking in a relaxed, fun, collaborative atmosphere. The process is used by professionals, design studios, within hackathons and start-up weekends, and has been shown to boost confidence, challenge assumptions and offers a more inclusive approach to ideation. No one fears stating the worst possible ideas, a process loaded with fun and laughter and maybe a few groans.

This session introduces learners' to this concept focused around the worst game idea ever and a playful process of transforming how they can be formed into the foundation for possible good game ideas.

To start, explain the activity using the following examples of bad to good ideas:

- a sealed metal tube for a boat / as transport - add an engine / design and pressurise it (submarine), add windows and wings (aeroplane), different wheels and slick design (bullet train)
- a chocolate teapot - why is it a bad idea? It would melt. However, the 'hot chocolate spoon' that retails for about €4-5 uses that quality as a design feature to create a gift / treat product
- windows you can't see out of / opaque windows - this how 'bathroom' or privacy glass started

To facilitate the worst game idea ever, have groups;

1. Come up with as many bad game ideas as they can. 8 -10 is a good number to aim for.
2. Ask them to list why they are bad game ideas, listing all the properties of what makes them bad as this is what forms the foundation of the transformation.
3. List what makes the WORST of these ideas SO terrible.

Here, you can decide whether to do a class activity or just swap the groups work, it is important no group works on their own bad ideas. Then either as a class (you can still swap the groups work and ask each group to offer up ideas to work on collaboratively a class) or within their groups.

1. Begin with searching for the OPPOSITE of the WORST attribute of each idea.
2. Then substitute something else in for the worst attribute.
3. Mix and match various awful ideas to see what happens - all the time considering how to make them good game ideas or how they might become good attributes for a game e.g. penalties or benefits for players, player challenges, player / character, game world or 'backstory' development. These concepts are covered more deeply in other lessons.

MM7 L5WS: LEAN CANVAS

Problem
List your customer's top 3 problems

-worry that pet will get lost
-worry that pet is up to no good when home alone
-miss pet and want a way to connect while at work

Existing Alternatives
List how these problems are solved today

There are various collars on the market that track your pet's location. Some track steps and various other stats. There is a separate camera device that can be worn by your pet, but nothing exists that works as a GPS, camera and communication device in one.

Solution
Outline a possible Solution for each problem

worry that pet will get lost-you will be able to track your pet at all times.
worry that pet is up to no good when home alone-you will be able to see what your pet is doing at all times.
miss pet and want a way to connect while at work-you will be able to connect using your voice while you're away

Key Metrics
List the key numbers, that tell you how your business is doing

Number of units sold.

Unique Value Proposition
Single, clear compelling message, that turns an unaware visitor into an interested prospect

Love Paws makes it possible to be with your pet even when you're away.

High Level Concept
List your x for y analogy (e.g. youtube = flicker for videos

Love Paws is the Nest of pet tracking devices.

Unfair Advantage
Somthing, that can't be easily copied or bought

I am Cesar Milan, world famous dog trainer and I have my own TV show and numerous celebrity clients.

Channels
List your path to customers

Give away for free to celebrity pet owners and celebrity TV personalities on Animal Planet, then do a billboard, print and web and social media campaign.

Customer Segments
List your customer segments and users

Ideal customers are middle to high income, tech-savvy pet owners who spend a significant time away from their pets.

Early Adopters
List the characteristic of your ideal customer

Early adapters are pet owners who love to keep up and own the latest tech innovations as soon as they come out.

Cost Structure
List your fixed and your variable costs

Product design, sourcing of materials, production costs, engineering, marketing, PR.

PRODUCT

Revenue Streams
List your sources of revenue

We will initially sell online with the goal to being on the shelves of major pet stores by end of year.

MARKET

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PROBLEM

List your top 1-3 problems.

EXISTING ALTERNATIVES

List how these problems are solved today.

SOLUTION

Outline a possible solution for each problem.

KEY METRICS

List the key numbers that tell you how your business is doing.

UNIQUE VALUE PROPOSITION

Single, clear, compelling message that states why you are different and worth paying attention.

HIGH-LEVEL CONCEPT

List your X for Y analogy e.g. YouTube = Flickr for videos.

UNFAIR ADVANTAGE

Something that cannot easily be bought or copied.

CHANNELS

List your path to customers (inbound or outbound).

CUSTOMER SEGMENTS

List your target customers and users.

EARLY ADOPTERS

List the characteristics of your ideal customers.

COST STRUCTURE

List your fixed and variable costs.

REVENUE STREAMS

List your sources of revenue.