

8.0 Module 8 Design Project with focus on Prototyping and Feedback

27 hours (18 in school and 9 at home)



Exposure 1
Exposure 2
Exposure 3

Exposure 1: Introduction to Design Thinking process and how to apply it
Exposure 2: Details of Problem Analysis – Observations, Inferences/Insights and Design Recommendations/Opportunities
Exposure 3: Mappings and Visualisation of Problem Space

Overall Task

Problem Analysis and Mappings

Task 8.1 (at School + Home)

- Redefining the problem to be solved:

Task 8.2 (at School + Home)

- List of materials and processes

Task 8.3 (at School + Home)

- Design Solution Possibilities and Ideation

Task 8.4 (at School + Home)

- Design Solution Prototyping and Feedback

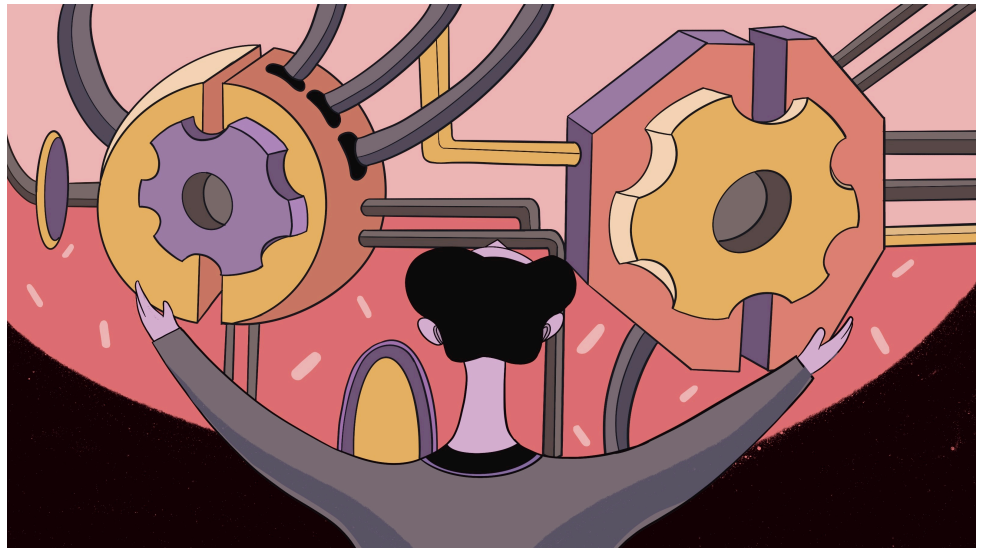
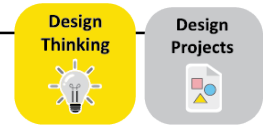
Task 8.5 (at School)
and Final Output

- Design Solution Final Presentation and Documentation

+ Reflections, Self Assessment and References

Design Project with focus on Prototyping and Feedback:

(18 hours at school + 9 hours at home)



Introduction

In this module, redesign of an object in the primary classroom is taken as a task to understand its importance in the design process. The students are encouraged to make use of their learning from the previous modules on Sketching for Ideation and Fundamentals of 3D to solve this problem.

Aim of this Module

The aim of this module is to make students understand the importance of understanding and analysis of a problem as part of the design process in solving and finding an appropriate innovative solution.

The students will make use of classifying observations, seeking inferences and insights, methods of mapping this information, making recommendations and locating opportunities for design in order to ideate and come out with solutions.

Place:

Place: Task 8.1, 8.2, 8.3, 8.4, and 8.5 done at School and at home



Grouping:

Grouping: Class tasks are done in groups of 3-4 and Home tasks are individually



Equipment:

Equipment: Sketchbooks for sketching and taking notes. students may use digital devices like computers or tablets to collate information and make presentations (if available, but not necessary)

Exposures

Exposure1: Introduction to Design Thinking process and how to apply it

Exposure 2: Details of Problem Analysis – Observations, Inferences/Insights and Design Recommendations/Opportunities

Exposure 3: Mappings and Visualisation of Problem Space

Design Thinking & Innovation Process involvement:

This task involves the following phases of the DT&I Process:

Phase 1. Observe/Empathise/Research (Primary and Secondary Research)

Phase 2. Understand/Analyse/Define (Analysis of Findings)

Phase 3. Ideate/Alternate/Create (trying creative alternatives)

Phase 4. Build/Prototype/Detail (making the prototype and the presentation)

Phase 5. Evaluate/Reflect/Implement (feedback from others)

Mapping SDG Goals:

The following SDG goals need to be considered while solving this task. While documenting elements and expressions, do think of gender equality and reduced inequalities and concern for life on our planet.



Task 8:

Task 8 = 8.1 + 8.2 + 8.3 + 8.4

School Hours: 12, Home hours: 6



Task 8.0



Overall Task (Task 8.1 + Task 8.2 + Task 8.3+ 8.4):

Task Topic:

Design Project with focus on Prototyping and Feedback: Designing Sustainable Solutions

In this module the students can work individually at home and form groups of 3-4 students and support each other at school.

The main aim of this course is for the students to be able to make a prototype and get feedback from the users.

The topic or area is to design sustainable solutions. You can use your learning from the module 6.0 on Sustainability and Design to find solutions.

The students can choose to work on a design project on sustainability issues related to the use of any of these five elements of nature:

1. Earth, 2. Water, 3. Energy, 4. Air and 5. Space

The suggested final design outputs could be any of these:

A. Animated visuals for social media campaigns on issues concerning the 5 elements of design

B. An animated awareness film with focus on any one of the elements of nature

C. A graphic short novel with focus on any one of the elements of nature

D. A pop-up book for children on the above subject

E. A set of 5 short illustrated story books on bringing focus to the 5 elements of nature

F. Design of an useful product based on material that can be recycled

G. Redesign of a Product based on the efficient use of the 5 elements of nature

Task 8.1



Task 8.1

School Hours: 4 and Home hours 2

Task Title:

Understand and Analyse the selected area/topic for exploration:

1. Choose an element of nature to do your design project

2. Identify issues or concerns with regard to the chosen element of nature

3. Brainstorm, make a list of keywords and making a mindmap could be helpful

4. Look for analogies as inspiration for your area / topic

5. Conduct secondary research to further understand the subject

6. If essential, conduct primary studies with potential users

7. Analyse the issues and identify opportunities for design

8. Figure out from the suggested outputs for your project from the alternatives

given above

Output 8.1: make a presentation of the chosen problem area and its analysis with the identified design opportunities

Task 8.2



Task 8.2

School hours: 4 and Home hours: 2

Done in groups of 3-4 at School and individually at Home

Topic title:

Ideation and Alternate Concepts

1. Ideate on possible solutions by sketching these to make each of the ideas visible
2. The students are encouraged to make use of the creative techniques mentioned in module 3.0 to brainstorm, think out of the box, lateral thinking, divergent thinking and analogical thinking in order to come out with several alternate ideas.
3. Spend considerable time in trying to challenge yourself to come out with better and better ideas. You can do this by analyzing how the previous idea can be improved or by looking at another solution from a different perspective.
4. Refer to the sustainable strategies and technologies mentioned in module o Sustainability and Design in task number 6.3b:
 - a. Form:** How the form of the object can be made suitable for easy production, packaging, transportation, etc.
 - b. Function:** Can the product be used using less energy, in less time and with ease
 - c. Materials:** How can the material of the object be chosen so that it is not a rare material, that it can be recycled or reused, that it can be grown in shorter duration, etc.?
 - d. Durability/Life:** Can the object be used for along period of time? Can it become better with age?
 - e. Affordability:** Can the product be affordable to a large number of people?
 - f. Sharability:** Can the product be shared among many users? Sharing is an efficient way of utilizing resources?
 - g. Reuse or recycle:** Can the object be put to another use or the materials of the product be recycled?
 - h. Waste:** Can the product be made with less waste in different stages of the product?
 - i. Energy:** Can the energy that is used to produce, transport, use the object be part of the green energy sources?
 - j. Resources:** Can the object be made with less use of resources?
 - k. Technology:** Can the technology used to produce the product be made more efficient, use less energy, use less resources, etc.?
 - l. Respect for Life:** Can the solution that you conceive have respect for other forms for life on earth? Can you make sure that your solution does not harm or make it difficult for other forms of life on earth?
5. Number or name these ideas
6. Select the best one out of your ideation (you could use user feedback to do the selection based on sustainability factors, effectiveness, originality, ease of implementation, etc.)
7. Finalise the selected idea with details

Output 8.2: Make a presentation of the alternate sketches as well as the short-listed idea

Task 8.3



Task 8.3

School hours: 6 and Home hours: 3

Done in groups of 3-4 at School and individually at Home

Topic title:

Detailing, Prototyping and User Feedback

8.3a: Concept Detailing

1. The final concept could involve any of the following in terms of visualization and detailing depending on what output you have chosen for this project:
 - A. Animated visuals: Two dimensional sketches and visuals with moving text and images
 - B. Animation film: 2d/3D images with moving images and sound (voice + music + sound effects)
 - C. Short graphic novel: Two dimensional sketches and visuals with text and images
 - D. 2 dimensional pop-up book: Paper cut-outs, paper folding, images and text
 - E. Short story books: Book design, images and text
 - F. Product out of recycled materials: Sketches and 3D product out of recycled materials
 - G. redesigned product: Sketches and mock-up of 3D product

2. Detail out the final selected solution: the details could be about its layout, form, images, text, colours, audio, function, ease of use, material selection, listing of advantages/disadvantages and how to produce

Output 8.3a: Detail out the final concept

8.3b: Concept Prototyping

1. Refer to the previous module on Prototyping 7.0 and choose an appropriate method to do a low-fidelity prototype of your chosen/selected concept
2. These are the prototyping techniques:
 - a. Paper Prototypes
 - b. Scenarios as Prototypes
 - c. Animatic for Prototyping
 - d. 3D prototyping through Card board and Clay/Plasticine
3. Depending on the choice of your output, you'll need to choose an appropriate prototyping technique
 - for animation Visuals and Animated film – Animatics Prototyping
 - for short graphic novel, pop-up books and short story books - Paper Prototype
 - for Products with recycled materials and redesign product - 3D prototyping using Clay or Plasticine
 - Scenarios as prototyping could be used for explaining any of the solutions

Output 8.3b: Make a prototype of your final idea – a low-fidelity version.

8.3c: Feedback from users

1. Choose your potential users – 4 to 5 users
2. You could demonstrate the prototype to these potential users one by one and step by step or let them use the product on their own
3. You could make questionnaire base on having a rating scale lets say 1, 3, 5, 7 and 9 (1 being low, 5 being average and 9 being highest)
4. You could ask them to rate different aspects of your solution

- ease of use
 - appropriateness of content or function
 - about the experience while using
 - about the aesthetics of the solution
 - material considerations
 - sustainability factors
 - cost factor
 - ease of production
 - etc.
5. Collate and analyze the feedback from the users
 6. Incorporate suggestions from the feedback in your design.
 7. Make the final prototype

Output 8.3c: Make a presentation of these in 6 - 10 slides (detailing, Prototype and Feedback)

Task 8.4



Task 8.4

School hours: 4 and Home hours: 2

Done in groups of 3-4 at School and individually at Home

Topic title:

Design Solution Final Presentation and Documentation

- Select the best one out of your ideation and Presentation Details of points mentioned above:
- Task 1: Prepare a presentation (of 6-8 minutes duration) to include all the stages of your project:
- a. Title of the Creative Explorations Design Project or Problem Statement
 - b. Team members
 - c. Summary/content listing of your presentation
 - d. Insights from understanding the area/topic
 - g. Creative explorations of Alternate Concepts (through sketches and visuals)
 - h. Final concept, detailing and prototyping
 - i. User feedback on your final solution
 - j. Next steps and suggestions
 - k. Full References
 - l. Acknowledgments – to all who have helped

Output 8.4: A presentation (6-8 minutes, roughly 15 to 25 slides) explaining the Project outcome along with the design Process with focus on prototyping and feedback

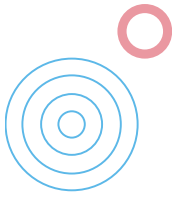
Reflection:



Questions to ponder:

- What are the most interesting methods of the prototyping techniques that you found useful in demonstrating your concept?
- Can you apply what you learnt for redesigning products and artifacts around your home and neighbourhood to make them better?
- Will you collaborate and make use of the prototyping Process with others – like your friends and cousins to solve problems?

Assessment:



Assessment Criteria (Task 8.1 + 8.2 + 8.3 + 8.4) - Assess yourself:

- The presentation of the chosen problem area and its analysis with the identified design opportunities was done well (Group + individual task 8.1)

Beginning *Developing* *Promising* *Proficient* *Excellent*

- Makes an appropriate presentation of the alternate sketches as well as the short-listed idea (Group + individual task 8.2)

Beginning *Developing* *Promising* *Proficient* *Excellent*

- Makes an appropriate presentation of detailing, Prototype and Feedback in 6 - 10 slides ((Group + individual task 8.3)

Beginning *Developing* *Promising* *Proficient* *Excellent*

- A presentation (6-8 minutes) explaining the Project outcome along with the design Process with focus on prototyping and feedback was done well (Group + individual task 8.4)

Beginning *Developing* *Promising* *Proficient* *Excellent*

Other References:

Other suggested References:

1. What is Prototyping?
<https://www.interaction-design.org/literature/topics/prototyping>

2. Why Prototyping is important:
<https://www.essentracomponents.com/en-gb/news/industries/telecoms-data/10-reasons-why-prototyping-is-essential>

3. How to Prototype:
<https://vilmate.com/blog/how-to-develop-an-idea-into-a-prototype/>