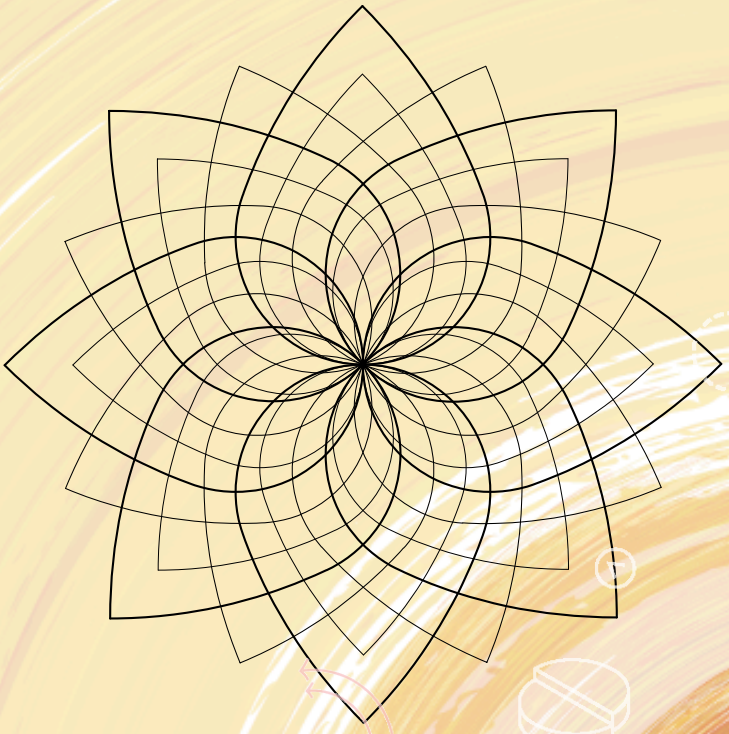
Design Thinking and Innovation

for Grade 11, Semester 1 and 2

Taskbook

2022



Task-book

CBSE, New Delhi

Design Thinking and Innovation Curriculum for Grade 11

Contents:

Module Contents

Design Thinking and Innovation Task-book for Grade 11

Introduction:

0.1.1
What is Design?

"Design is solution to a problem"
-John Maeda, Designer and Teacher

"Essentials of design are- purity, precision, details "
-Prof Sudhakar Nadkarni, Designer and Teacher

"Design is thinking made visual"
-Saul Bass, Graphic Designer

"Design is plan for arranging elements in such a way
-Charles Eames, Designer and Film Maker

"Design is not just what it looks like and feels like.
Design is how it works."
-Steve Jobs, Designer and Businessman

In a nutshell, design is about understanding needs and being sensitive to issues, identifying problems that need to be solved, creating innovative appropriate solutions, and considering aspects of sustainability such that it makes a positive difference to life in our universe.

0.1.2
Who is a Designer?

A designer is a highly creative person who enjoys solving problems. The reason why they enjoy being creative is that they are sensitive to the needs of people and understand the extent of the issues in society. This sensitivity allows a designer to be intuitive and to think of opportunities that enhance the lives of people. It makes them appreciate the intricate aspects of a problem or a situation to help better it through creative designs. (Ref: 2)
Design being an important part of the creative industry has many options for you to pursue, such as Communication/Graphic Design, Product Design, Animation Design, Automobile Design, Architecture Design, Environmental Design, Digital Design, Textile/Fashion Design, and such.
So, if you are looking for something which will give your creative streak in you an outlet and also provide you with innovative problem-solving skills, design may be the option for you.

0.1.3
What is Design Thinking?

One can understand Design Thinking as a method to solve problems using a process. It is one of the most effective ways to create something new.
A process that first understands users, identifies and analyses a problem or need, and researches relevant information, after which ideas are explored and analyzed, until an appropriate innovative solution to the problem or need is arrived at.

Hence Design Thinking could be viewed as the process that translates an idea into a blueprint for something useful, whether it's a vehicle, a building, a graphic, a service or a system. (Ref: 2)

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0.1.4
Who is a Design Thinker?

A Design Thinker is a person who applies the Design Thinking process to solve problems and find creative innovative solutions in any field or domain. For example, you could apply Design Thinking to solve problems in arts, social sciences, law, medicine, engineering, business, etc. It could even be applied to solve problems at home or in your neighbourhood or in your place of work. Whether it is a simple problem or a complex problem, a design thinker finds creative ways to tackle them.
If everyone could adopt this method to solve problems then we would be moving towards a creative society that finds solutions to many of its problems.

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0.1.5
What is the Design Thinking Process?

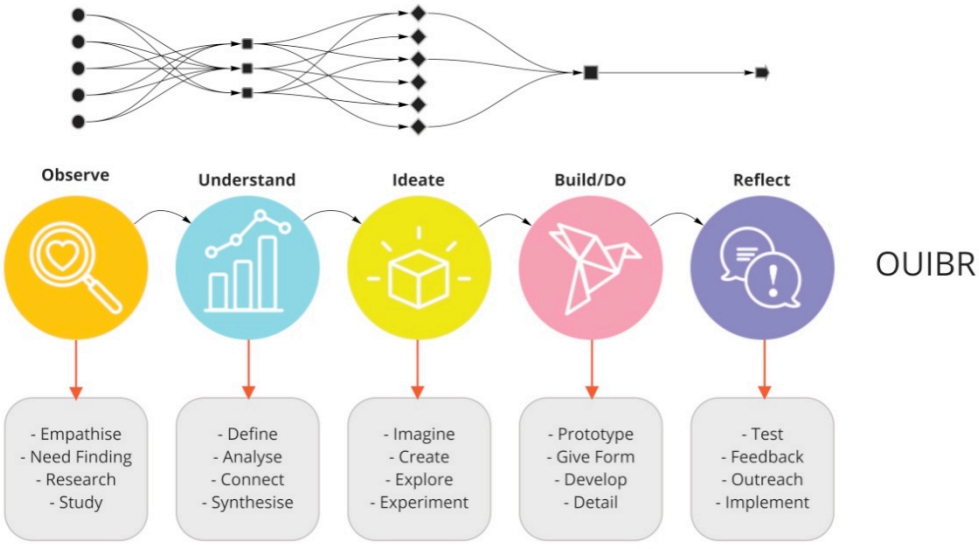
It involves the following five phases in the process of solving a problem:
Phase 1. Observe/Empathise/Research,
- The first phase helps you to identify needs and locate issues to be solved through observation and empathy

Phase 2. Understand/Analyse/Define,
- The second phase of the process helps you to understand, define and analyse the problem area

Phase 3. Ideate/Alternate/Create,
- The third phase helps you to come out with several alternate creative innovative solutions to the problem

Phase 4. Build/Prototype/Detail and
- The fourth phase helps you to actualize the solution by building mock-ups, creating scenarios, and then prototyping and detailing

Phase 5. Reflect/Feedback/Implement
- The last fifth phase is to get feedback through evaluation so that the suggestions can be implemented in the final solution.



1.1.6

What is Innovation?

Innovation involves the implementation of something new and replacing or reframing the existing mindset. It is about translating a concept, idea, thought, or invention into artefacts and services that create value in life. It is the process of transforming ideas into commercial reality. Innovation plays a major role in society. It helps us cater to the needs of people that arise from constant physical and emotional changes. It helps identify the crucial applications of technology and scientific inventions.

As compared to Innovation, Invention happens once in a while. However, each Invention may produce millions of Innovative Products – like the invention of Wheel has produced and continues to produce Innovative Products for the benefit of mankind. Innovation is in how an invention can be used to solve problems. Hence, Design pursues Creativity of Innovation.

1.1.7

What is the overall vision and aims of Design Thinking and innovation Curriculum?

The overall vision of DT&I curriculum is to be able to instill the following in the students:

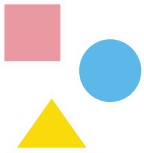
• Explore student's **sensory** abilities, **cognitive** abilities and **social** abilities

• Create awareness in the students through **observation**, **discovery**, **analysis**, **experience**, **collaboration** and **reflection**

• Nurture their **curiosity** and enhance their **explorative** abilities

• Foster **creativity** and **innovation** in students

• Identify **problems** and be able to find **solutions** + Apply **Design Thinking** process and methods to **solve** various **problems**



• Learn the fundamentals/essentials of the **creative design discipline**

In addition, DT&I will promote socially responsible practice through enlightening the students with ways to solve problems within the Sustainable Development Goals as mentioned by the United Nations. The course also helps students derive culturally-rooted understanding of design from information documented under the Indian Knowledge Systems.

References:

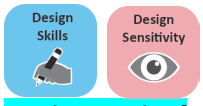
Reference 1: https://dsource.in/resource/quotes
Reference 2: http://designindia.net/institutions/design-information/design-questions

Design Thinking and Innovation Task-book for Grade 11

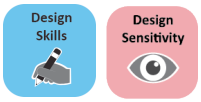
Overview:

0.2
Modules for grade 11

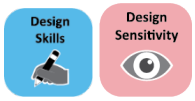
Semester 1



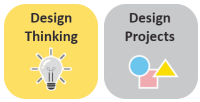
Fundamentals of Publication Design



Fundamentals of Moving Images

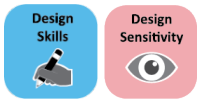


Fundamentals of Information Design

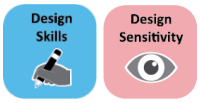


Design Project 3: Communication Design Collaborative Project

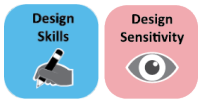
Semester 2



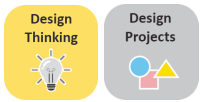
Fundamentals of Product Design



Fundamentals of Interface Design



Fundamentals of Game and Toy Design



Design Project 4: Product Design Collaborative Project

0.3
Overall Vision for Grade 11

- Create sensitivity towards Design
- Understanding of Design Options
- Focus on different Design Fields
- Focus on solving problems collaboratively together

0.4
Overall Learning Objectives

- Fundamentals of Publication Design, Moving Images and Information Design
- Fundamentals of Product Design, Interface Design and Games and Toys
- Application of Design Thinking Process through Collaborative Projects

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0.5
Additional Competencies

- Ability to work Collaboratively
- Be able to solve wicked Problems
- Start a Design Enterprise or a Start-up
- Explore new fields – Info-visualisation, Digital Design and Gaming

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0.6
Matching SDG Goals

Design Thinking and Innovation Task-book for Grade 11

Overview:

0.7
Grading

Grade Awarded	Grade	Points
Outstanding	O!	1.0 (or Extra Points)
Above Excellent	AA	1.0
Excellent	AB	0.9
Above Proficient	BB	0.8
Proficient	BC	0.7
Above Promising	CC	0.6
Promising	CD	0.5
Above Developing	DD	0.4
Developing	DE	0.3
Above Beginning	EE	0.2
Beginning	EF	0.1

0.8
Assessment

- Define the criteria for assessment for this Module
(mentioning the factors for grading/assessment preferably on a Matrix)

Beginning FF-EF-EE 0.0-0.1-0.2	Developing DE-DD 0.3-0.4	Promising CD-CC 0.5-0.6	Proficient BC-BB 0.7-0.8	Excellent AB-AA 0.9-1.0
Criteria 1	Criteria 1	Criteria 1	Criteria 1	Criteria 1
. . . .	Criteria 2	Criteria 2	Criteria 2	Criteria 2
. . . .	. . . .	Criteria 3	Criteria 3	Criteria 3
. . . .	. . . .	. . . .	. . . .	. . . .
			. . . .	. . . .

Final Credits for this Module = Grade x Credits

0.9
Validation/Feedback

- The task done needs to be validated with feedback from both students as well as teachers (so that this can become an input for making changes in the next year)

0.10
References

- References are mentioned at the end of each task
- As much as possible, these should be made accessible to both students and teachers

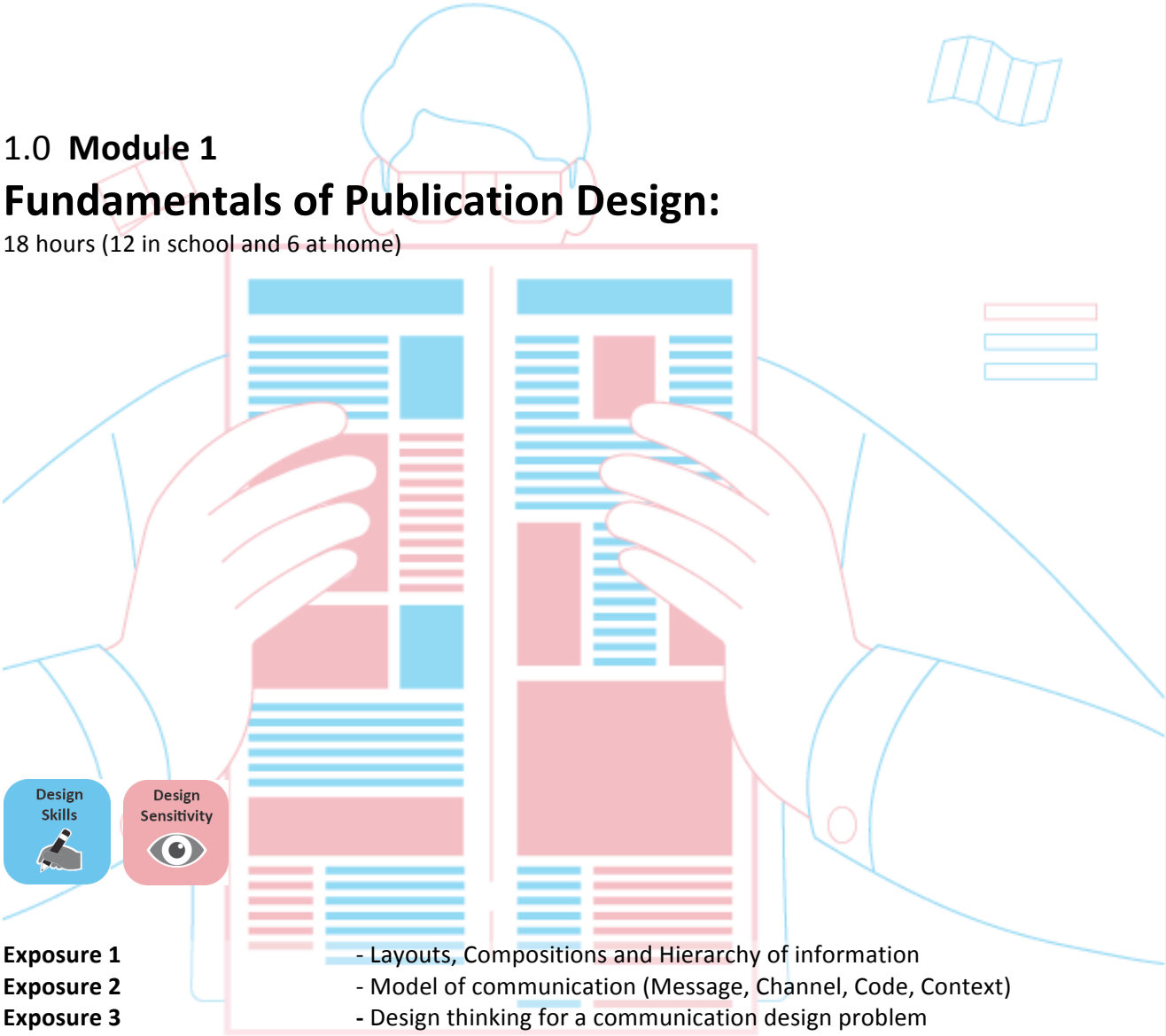
0.11
Exhibition/Presentation

- As most of the design tasks have a visual output, the class is encouraged to put up the tasks as an exhibition (for a short period) in the classroom / in common areas of the school or as a group presentation for others in the school to see.

1.0 **Module 1**

Fundamentals of Publication Design:

18 hours (12 in school and 6 at home)



Exposure 1 - Layouts, Compositions and Hierarchy of information
Exposure 2 - Model of communication (Message, Channel, Code, Context)
Exposure 3 - Design thinking for a communication design problem

Task 1.1 (at School + Home) Identification of Elements of Composition and Publication Design
- Identify Elements of Composition
- Simple Visual design/redesign of a Publication

Task 1.2 (at School + Home) Analysis of the medias of communication
- Analysis of Different Media
- Compose a message for a social awareness campaign

Task 1.3 (at School + Home) - Design a story book for children

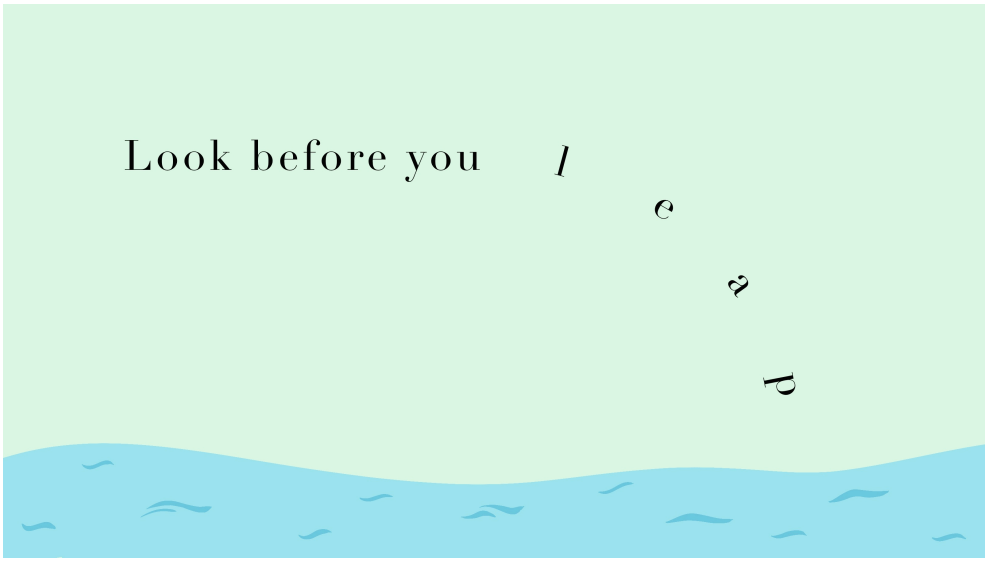
Final Output - Make a presentation of all your documentation

+ Reflections, Self Assessment and References

1.0 Module 1

Fundamentals of Publication Design:

18 hours (12 in school and 6 at home)



Introduction

Publication Design is the design of both printed and digital publications – this includes magazines, books, reports, forms, posters, websites, web magazines, blogs, etc.
- The learning will include the basics of designing and deciding the choice of the type and images, its layout and compositions, format of the publication, its size, etc.
- The students will also learn the basics of communication methods and processes
- The students will do 3 different tasks to understand this subject, the first on understanding the elements of publication design, second on understanding communication methods and the third on design of a publication

Aim of the Module

To expose school children (Grade 11) to basic fundamentals of publication design and the principles of designing for both print and digital publications. It should create an interest in this field, nurture their sense of curiosity, motivate them to explore and discover this area. It should give exposure to solving simple communication design problems.
The students should be able to use this knowledge for designing story books, magazines, websites, blogs, etc.

Place:

Place: Task 1.1, Task 1.2, Task 1.3 – done at both school and at home

Equipment:

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

Grouping:

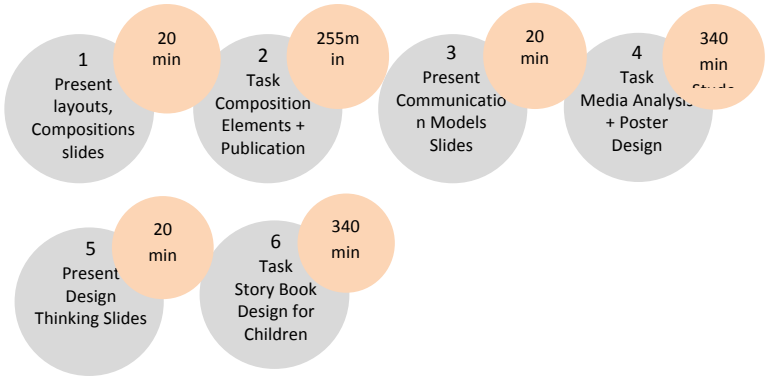
Equipment: Sketchbooks for sketching, Stationary (Pencils, Pens, Colours, Tracing paper), students are advised to use digital devices like computers or tablets (if available, but not necessary)

Exposures:

Exposure 1: Layouts, Compositions and Hierarchy of information
Exposure 2: Model of communication (Message, Channel, Code, Context)
Exposure 3: Design thinking for a communication design problem

Task Sequence:

Task 1.1 + Task 1.2 + Task 1.3



Design Thinking & Innovation Process involvement:

This task involves the following phases of the DT&I Process:
Phase 1. Observe/Empathise/Research (observation of elements of publications)
Phase 2. Understand/Analyse/Define (analysis of media)
Phase 3. Ideate/Alternate/Create (creative alternatives)
Phase 4. Build/Prototype/Detail (making a 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 people and events, do think of gender equality and reduced inequalities and concern for life on our planet.

Task 1.0

Task 1 = 1.1 + 1.2 + 1.3:
School Hours: 12, Home hours: 6

Task 1.1

Task 1.1:
School Hours: 4, Home hours: 2
Done in groups of 3-4 at School and individually at Home

Task 1.1a

Task 1.1a:
School Hours: 2, Done in groups of 3-4 at School

Topic title:

Identifying Elements of Composition

Choose any of the following:
A. A newspaper page you like
B. A Magazine that you like
C. Your favourite comic book
D. Your favourite Website
- Bring a copy of one of the above to your class
- You will study the front page and a page inside
1. First identify the **major visual elements** on both the front page as well as the inside page. You should observe how the **text and images/visuals** are used – make a list of all the different elements on both the pages
2. Do these elements have a **hierarchy in representation** of text and image? Is one more prominent than the other – what is the technique used for this – size, boldness, placement on the page, use of colour, orientation, use of texture, etc. Note down these factors
3. How is the **page layout composition** – horizontal, vertical, or tilted?
Alignment: Is it aligned on the basis of symmetry? Note down these factors.
4. Make two columns on an A4 size sheet, The first for the front page and the second for the inside page and note down your findings for points 2 and 3
5. **Grids**: Are there hidden grids or columns for composing the content? Then how many?
Output 1.1a: Identify many aspects of the Elements of Composition and draw the layout of only the hidden grids on paper as lines

Task 1.1b

Task 1.1b:
School Hours: 2, Home hours: 2
Done in groups of 3-4 at School and individually at Home

Topic title:

Simple Visual design/redesign of a Publication:

This task is about understanding Layouts, Compositions and Hierarchy of information
- Select a simple visual design problem (any one of the following)
A. School timetable
B. School Map

C. Identity of your school with letterhead and Visiting cards for School staff
D. Scorecards and school certificate (for sports)
1. Understand the design requirements
2. List all the information and visual elements
3. Decide the hierarchy of the information
4. Create at least 5 rough layouts
5. Prepare the final visual design
6. Print it/or Sketch it neatly
Output 1.1b: Printout or sketch of the final design. The design of the publication needs to be composed with proper layout after considering aspects of hierarchy of information. (Please note: Steps 1-4 could be done at school and the rest 5-6 at home)

Task 1.2

Task 1.2:
School Hours: 4, Home hours: 2
Done in groups of 3-4 at School and individually at Home

Topic title:

Analysis of the media of communication:

Understanding the model of communication (Sender, Message, channel, Code, Context and Receiver).

Task 1.2a

Task 1.2a:
School hours: 2, Done in groups of 3-4

Topic Title:

Analysis of Different Media

Identify the source, message, code, context and receiver in the following channels of communication:
A. Newspaper article
B. Poster on the notice board
C. Film poster
D. Advertisement page in a magazine
E. A comic book
F. Page in a textbook
G. Website
H. WhatsApp or email
Make a chart of your analysis in a table format with the channel on vertical axis and the factors for communication on the horizontal axis:
1. Identify the Source - who has sent the message – Newspaper agency, NGO, School, etc.
2. What is the message or content - summary of the information conveyed
3. What is the Channel or Media - spoken words, TV, Poster, Newspaper, book, etc.
4. What is the Code – Is it text, images, cartoons, etc.
5. What is the context – Political, Entertainment, etc.
6. Identify the receiver – who is the reader
Output 1.2a: Write these clearly on the chart - Analysis of the different (media)

after considering different factors of communications

Task 1.2b

Task 1.2b:
School hours: 2, Home hours: 2, Done individually

Task Title:

Compose a message for a social awareness campaign

on use of 'Green Energy' or 'Sustainability practices' or 'Re-cycling'

You need to choose any 2 of the given channels to convey your message. The message can be made out of Text or Image or Text + Image.
A. News magazine
B. Comic Strip
C. A Cartoon
D. Poster for school notice board
Understanding a process to solve a communication design problem
1. Identify all the issues and concerns connected with chosen subject
2. Read about the issue and discuss it with your friends, teachers and parents
3. Note different points of view and make a selection on what you would like to convey as a message on the chosen subject
4. Choose your channel to convey your message
5. Sketch your alternate ideas
Output 1.2b: Finalise and layout the message using text, image or text + image in any two of the chosen channels

Task 1.3

Task 1.3:
School Hours: 4, Home hours: 2, Done individually

Topic title:

Design a Story Book for Children

on any of the following subjects:
A. Traffic Rules and Road Crossing
B. Elements from Nature as your characters – an inspiring story from Nature
C. On a social issue dear to your heart

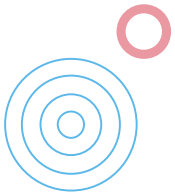
Understanding a process to solve a communication design problem
1. Identify all the issues, rules, conventions connected with chosen subject
2.Read about the issue and discuss it with your friends, teachers and parents
3. Note different points of view
4. Write an interesting short story suitable for primary school children in less than 300 words
5. Plan appropriate visuals to go along with the story (Sketches, Illustrations, Photographs, etc.)
6. Apply principles of composition for the layout of your book, and make a choice on how many columns to use on a page, how to align the text – central, left or right aligned and how and where to place the image or illustration
7. Use only one typeface - you can vary the size, weight and colour
8. Design and print a book (A5 size) of either 8 or 12 pages (either 2 or 3 A4 size paper sheets, printed on both sides, folded in the middle)

Output 1.3: Make a presentation of your book in the class to your classmates explaining the process that you followed and the thought behind your solution

Reflection:

Questions to ponder:
- Would you like to be part of the team to design the school news magazine?
- Would you like to write, illustrate and design books for children?
- Would you like to pursue this creative field and wish to become a graphic designer?
- Would you like to be part of the publishing industry?

Self Assessment:



Assessment Criteria (Task 1.1 + 1.2 + 1.3) – Assess yourself:

- Identified well many aspects of the Elements of Composition (Group Assessment, Task 1.1a)

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

- The design of the publication was well composed with proper layout after considering aspects of hierarchy of information. (Group + Individual Assessment, Task 1.1b)

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

- Analysis of the different medias was done well after considering different factors of communications (Group Assessment, Task 1.2a)

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

- The design of the message for social awareness campaign was well done. (Group + Individual Assessment, Task 1.2b)

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

- The Storybook for children was done well after understanding the process to solve a communication design problem (Group + Individual Assessment, Task 1.2b)

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

Other References:

Other suggested References:

1. References:
Fundamentals of Layout and Compositions:
https://www.youtube.com/watch?v=a5KYlHNKQB8

2. Basics of Typography:
https://www.youtube.com/watch?v=sByzHoiYFX0

3. Grids and Layouts
https://www.dsource.in/course/visual-design-primer-grid

2.0 **Module 2**

Fundamentals of Moving Images:

18 hours (12 in school and 6 at home)

Exposure 1	**- Elements of Moving Images** – shot, scene, sequence, camera framing/shots, angle, movements, lighting, composition
Exposure 2	**- Types of moving images** – cinema, documentary, News report, Interviews, etc.
Exposure 3	**- Production of Moving Images** - Shooting, recording voice + images, editing, titling, credits
2.1 **Task** (at School + Home)	- Pre-production - Write a Story Script to make a short Video Movie
2.2 **Task** (at School + Home)	- Production and Post-production - Shooting and Editing the Video
Final Output	- A presentation and exhibition of all the works + Reflections, Self Assessment and References

2.0 Module 2

Fundamentals of Moving Images

18 hours (12 in school and 6 at home)

Introduction

Images are shown in quick succession, one after another lead to the perception of motion. Video camera captures both moving images and sound at the same time. It can be used to document events, capture a story and show a demonstration or presentation. In this module you will use a mobile camera to make a video. This module has an introduction to the elements of moving images, an understanding of the types of moving images and exposure to its production process.

Aim of the Course

To expose school students (Grade 11) to the fundamentals and principles of designing for moving images.
We will look at and try to understand a very creative field - the design for the video format. The video format captures images across time along with the audio. The Video format could include many media (still and moving images, text and audio) and uses of our sensory's of sight and hearing. This module should create awareness and sensitivity towards the design of moving images.
The students will make a video film at the end of this module.

Place:

Place: Task 2.1, Task 2.2and Task 2.3 – done at both school and at home

Grouping:

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

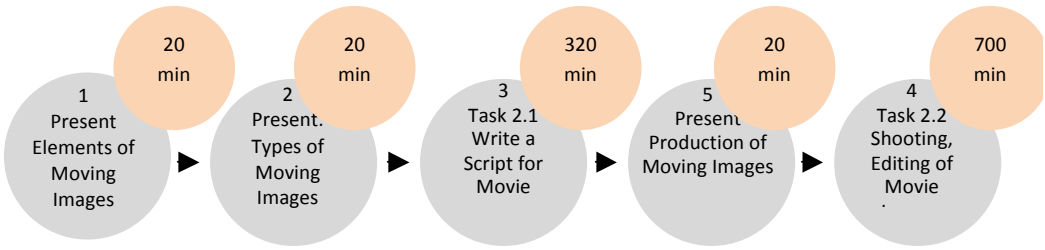
Equipment:

Smart Mobile phone with Camera + Sketchbooks for taking notes and creating storyboards/scenarios, Stationary (Pencils, Pens). Mobile can be used for editing. Students may use digital devices like computers or tablets for editing (if available, but not necessary)

Exposures

Exposure 1: Elements of Moving Images – shot, scene, sequence, camera framing/shots, angle, movements, lighting, composition
Exposure 2: Types of moving images – cinema, documentary, News report, Interviews, etc.
Exposure 3: Production of Moving Images - Shooting, recording voice + images, editing, titling, credits

Task 2.1 + Task 2.2



Design Thinking & Innovation Process involvement:

This task involves the following phases of the DT&I Process:
Phase 1. Observe/Empathise/Research (observation of Moving Images)
Phase 2. Understand/Analyse/Define (Fundamentals and Principles)
Phase 3. Ideate/Alternate/Create (trying creative alternatives)
Phase 4. Build/Prototype/Detail (making a 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 2.0

Task 2.0 = 2.1 + 2.2
School Hours: 12, Home hours: 6

Task 2.1:

Done at School + Home

Task 2.1
School Hours: 4 and Home Hours: 2
Done in groups of 3-4 at School and individually at Home

Topic title:

Preproduction

- Write a Story Script to make a short Video Movie

Chose a topic that has a social message to communicate to people. The social message could be about how to keep the surroundings clean to sustainability issues, show respect for the elderly, etc. You could look at SDG goals concerning gender equality, reduced inequalities and concern for life on our planet.

You should be able to tell this message in less than 3 minutes maximum.
1. First select the subject/topic for your film from the above suggestions
2. Understand the subject well by discussing it with your group members – you make a Mindmap to look at the subject from different points of view and perspectives
2. Brainstorm and ideate on possible ways to bring awareness about your subject
3. Create a narrative about the subject by weaving it into a story. In the story, you can have characters, plot/story, conversations, settings, etc.
4. Creatively think of the story – could be by creating an incident, which will bring focus on the social issue
5. The format of the video could be an enacted story, a musical or a dance drama
6. Write a draft about the story in about 300 words
7. Convert the story into smaller sections. In each of these sections see how the characters will play this role –his/her actions along with the dialogue and the setting
8. Rewrite the script to make it better (after discussions)
9. To make it easy, you could sketch visuals for each of these sections to make a visual storyboard of your script

Output 2.1: Present your script to the class. (You could also play-enact the story)

Task 2.2:
Done at School + Home

Task 2.2
School Hours: 8. Home Hours: 4
Done in groups of 3-4 at School and individually at Home

Topic title:

Production and Post-production - Shooting and Editing the Video Movie

Once you are satisfied with your script, you need to plan and prepare to shoot the scenes using a video camera. You can make use of the video camera on your mobile. You'll have to practice holding it steady while shooting the different scenes of your script.

1. Plan and make a schedule for shooting the different scenes of your script. The simple schedule is to number your shots in each of these scenes, mention what the characters do, along with their dialogues, the setting or environment and the type of camera movement
2. Start Shooting – you might have to take more than one shot to get it right.
3. To remember each shot, you could mention the number of the shot or shoot a picture of it before you start the shoot
4. Now that you have all the shots of your script, you'll need to edit the footage.
5. You could use the editing software on your mobile to piece together the shots that you have selected
6. Shoot a title page with the name of your video and at the end shoot a page giving credits to all who have participated in the making of your video
7. You could choose to add background music or audio to your video

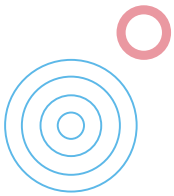
Output 2.2: Present the final film to your class

Reflection:

Questions to ponder:

- Which are your favorite movies and why?
- Would you like to make videos or films? Or be a film maker?
- Would you like to use this media to convey social and instructional messages on video platforms like Youtube and Vimeo?

Self Assessment:



Assessment Criteria (Task 2.1a + 2.1b + 2.1c) – Assess yourself:

- The script as well as the storyboard was well conceived. (Group + Individual Assessment, Task 2.1)

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

- The script of the story was well presented by the group. (Group + Individual Assessment, Task 2.1)

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

- The visuals of the story were shot well. (Group + Individual Assessment, Task 2.2)

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

- The editing of the story was well done. (Group + Individual Assessment, Task 2.2)

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Other References:

Other suggested References:

1. Mai – a short film
https://www.dsource.in/case-study/mai

3.0 **Module 3**

Fundamentals of Information Design:

18 hours (12 in school and 6 at home)

Exposure 1	- Basics of Information Design
Exposure 2	- Basics of Information Mapping and structuring
Exposure 3	- Basics of Information Organisation and Visualisation
Task 3.1 (at School + Home)	- Visually mapping the journey from home to school
Task 3.2 (at School + Home)	- Design charts about the overall statistics of the school
Task 3.3 (at School + Home)	- Design an information signage for the school
Final Output	- Make a presentation of your documentation
	+ Reflections, Self Assessment and References

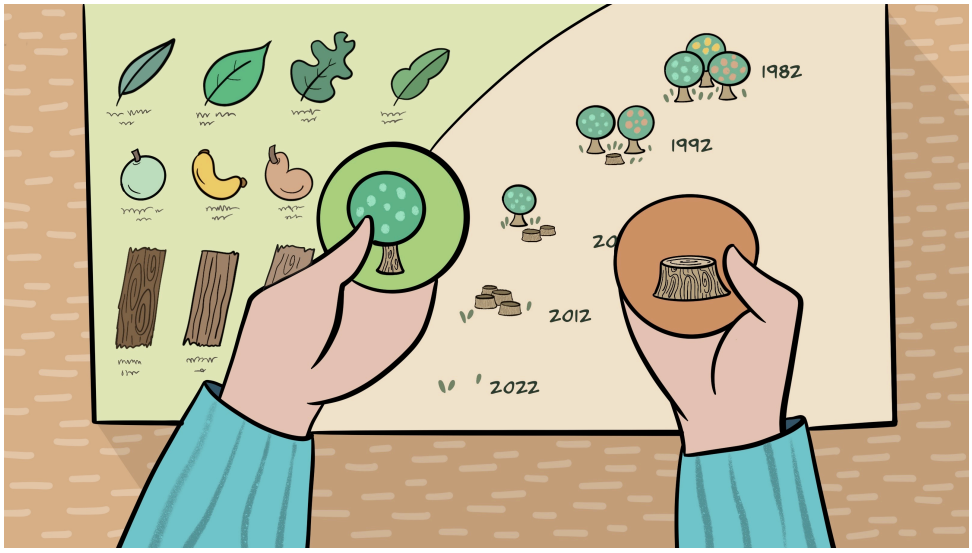
3.0 Module 3

Fundamentals of Information Design:

Design Skills

Design Sensitivity

18 hours (12 in school and 6 at home) = 18 credits



Introduction:

Information Design makes it easier to understand data in form of numbers and figures. This could be a map showing the density of population in different countries, a graph depicting the number of tigers in our forests, a map showing the path of the rivers, markings on a vessel to show its quantity and such. Examples of the use of information design are traffic lights that use colour to manage traffic, speedometer in a vehicle to let you know the speed, signage at the airport to show the direction to its facilities, and the design of the interface on a mobile or website to find information. You must have noticed that facts and figures visualized as information makes it easier to understand situations during elections and sports events (for example - information graphics during cricket and football matches).

Information Design involves organizing and structuring information in form of text, visuals and data to make it easy to understand, compare and analyse.

Aim of the Course:

To expose school students (Grade 11) to basic fundamentals of Information Design. The students will do the following three tasks: (a) visually map their journey from home to school or represent an activity or event without the use of any text or words, (b) make a chart about the overall statistics of the school and (c) design information way-finding signage for their school.
The students should be able to use this knowledge while designing books, magazines, websites, blogs, interfaces for objects and mobile applications and be able to communicate better while representing information in maps, charts and diagrams.

Place:

Place: Task 3.1 and Task 3.2 done at School and at home

Grouping:

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

Equipment:

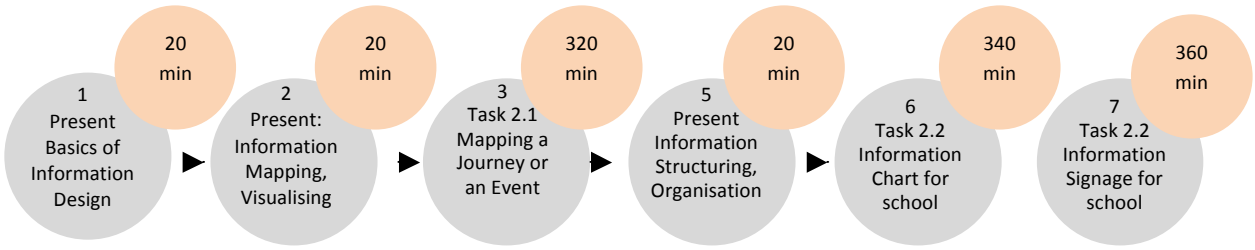
Equipment: Sketchbooks for sketching, Stationary (Pencils, Pens, Colours, Tracing paper), students are advised to use digital devices like computers or tablets (if available, but not necessary)

Exposures

Exposure 1: Basics of Information Design
Exposure 2: Basics of Information Mapping and Visualisation
Exposure 3: Basics of Information structuring and Organisation

Task Sequence

Task 3.1 + Task 3.2 + Task 3.3



Design Thinking & Innovation Process involvement:

This task involves the following phases of the DT&I Process:
Phase 1. Observe/Empathise/Research (observation of Information)
Phase 2. Understand/Analyse/Define (Fundamentals and Principles of organizing Information)
Phase 3. Ideate/Alternate/Create (trying creative alternatives)
Phase 4. Build/Prototype/Detail (making the output 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 3:

Task 3 = 3.1 + 3.2
School Hours: 8, Home hours: 4

Task 3.1

Task 3.1
School Hours: 4 hours in school and 2 hours at home,
Done individually both at School and at Home

Task Topic:

Visually Map your Journey from Home to School

This task is to visually draw a map of the journey from your home to school. If there are multiple paths, draw multiple paths to reach the school. The mapping will involve both quantitative figures as well as qualitative figures, Quantitative figures could be the distance and time to reach the school, the number of trees, vehicles, people, shops, buildings, lamp posts, etc., even interesting things like number of people wearing colour red dress, talking on mobile, sleeping animals, etc. can be observed and noted.
Qualitative figures could be your energy level, the brightness of the sunshine, sound levels, excitement/enthusiasm level, etc.
1. Observe 3 quantitative variables and 3 qualitative variables during the journey from your home to school
2. Map the path of the journey on an A3 size sheet of paper. If there are multiple paths do note down these paths
3. Draw and write the names of the major landmarks in your journey on the map according to their location. The size of buildings, trees, etc. needs to be scaled down
4. Mark 5 points along the map and visually show both the quantitative and qualitative variables at these points
Output 3.1: Present this Visual Mapping to the whole class

Task 3.2

Task 3.2
School Hours: 4 hours in school and 2 hours at home,
Done in groups of 3-4 at School and individually at Home

Task Topic:

Design Charts about the Statistics of your School

A chart visually represents data or information in the form of numbers and figures. These are some of the common forms of charts: (a) Bar Chart, (b) Line Chart and (c) Pie Chart.
One can make these charts easy to understand by including visuals in its representation. The challenge for you is to look at different statistics concerning your school and make a poster with these charts.
The students should work in groups of 3 and 4, take up different statistics concerning their school and represent it visually in an interesting and understandable manner.
1. Collect information about your school – could be the numbers about

students, different classes, teachers and staff members, classrooms, facilities, results, competitions, events, holidays, timings, etc.
2. Each group selects at least 4 different statistics to do information design
3. Ideate how to represent these figures so that they can be understood easily and is interesting to look at
4. You should sketch alternatives, discuss how to improve them and select the best ones to take forward
5. Draw/ Illustrate these as well as you can (you could use colours and textures)
Output 3.2: The final output should be on an A3 size paper showing all 4 charts together next to each other

Task 3.3

Task 3.3
School Hours: 4 hours in school and 2 hours at home,
Done in groups of 3-4 at School and individually at Home

Task Topic:

Design Directional Signage for your School

A Signage System helps in wayfinding and locating facilities. It makes use of directional arrows to show direction, visuals to represent the facility and text as additional support. These are used in public spaces like airports, railway/bus stations, hospitals, schools, metros, roadways, museums, etc.
The task is to design a signage system for your school to make it easy for identification and locating a facility. The signage can include even fun and interesting elements – using graphics and murals on walls, ceilings and floors.

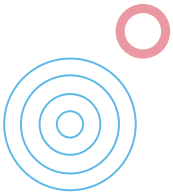
1. Make a list of all the facilities in your school – Classrooms, labs, staff rooms, library, workshops, toilets, playground, etc.
2. Each group selects at least 6 different facilities to do signage design
2. Ideate how to represent the facilities so that they can be identified easily and is interesting to look at
3. You should sketch alternatives, discuss how to improve them and select the best ones to take forward
4. Draw/ Illustrate these as well as you can (you could use colours) along with text and directional arrows
5. Make paper models of the signage
Output 3.2: The final output should be a presentation on A3 size papers showing all the signage for the 6 facilities

Reflection:

Questions to ponder:

- Would you like to collate, organize structure and visualize information to make it easier to understand? Or to compare and analyse?
- Would you like to pursue this creative field and take up the profession of Information Visualization?
- Will you remember what you have learnt to make presentations that use charts and maps more interesting and easy to understand?

Self Assessment:



Assessment Criteria (Task 1.1 + 1.2 + 1.3) – Assess yourself:

- The visualization of the journey from home to school was done well with both the quantitative and qualitative elements represented (Group + Individual Assessment, Task 3.1)

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

- Design of the charts about the Statistics of the School was very well done. (Group + Individual Assessment, Task 3.2)

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

- Design of the directional signage for the School was very well done. (Group Assessment, Task 3.3)

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Other References:

Other suggested References:

1. **References:**

Introduction to Information Design:
https://visme.co/blog/information-design/

https://piktochart.com/blog/information-design/

2. Signage Design
https://www.dsource.in/course/design-signage

4.0 **Module 4**

Design Project: Communication Design Collaborative Project

27 hours (18 in school and 9 at home)

Design Thinking

Design Projects

Exposure 1	- Introduction to Design Thinking Process for communication Design
Exposure 2	- Introduction to making a process/ time/journey Map
Exposure 3	- Case study of a project in communication Design
Task 4.1 (at School + Home)	- Understanding the problem to be solved
Task 4.2 (at School + Home)	- Analysis of the problem
Task 4.3 (at School + Home)	- Ideating and creating prototypes
Task 4.3 (at School + Home)	- Finalising and presentation
Final Output	- Make a presentation of your solutions
	+ Reflections, Self Assessment and References

4.0 **Module 4**

Design Project: Communication Design Collaborative Project

(18 hours at school + 9 hours at home)

Introduction

This module introduces the students to the design thinking process for solving a Communication Design problem. They are encouraged to make use of the knowledge and experience gained out of the previous three modules - Publication/Communication Design, Moving Images Design and Information Design.

Aim of this Module

To expose school students (Grade 11) to the different stages of the design thinking process. The stages will involve Observation, Primary Research to study User Needs, Secondary Research Analysis to Understand the Problem Space, Analysis of this information, Ideating for creative alternatives, Prototyping with Mock-ups, Getting Feedback and then collating and doing a Presentation of the Project.

Place:

Place: Task 4.1, 4.2, 4.3, 4.4, and 4.5 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 for communication Design
Exposure 2: Introduction to making a process/ time/journey Map
Exposure 3: Fundamentals of effective Presentation Techniques

Design Thinking & Innovation Process involvement:

This task involves the following phases of the DT&I Process:
Phase 1. Observe/Empathise/Research (observation of communication issues)
Phase 2. Understand/Analyse/Define (analysis of primary and secondary research)
Phase 3. Ideate/Alternate/Create (trying creative alternatives)
Phase 4. Build/Prototype/Detail (making the output 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 4:

Task 4 = 4.1 + 4.2 + 4.3 +4.4 + 4.5
School Hours: 27, Home hours: 9

Task 4.0

Overall Task (Task 4.1 + Task 4.2 + Task 4.3 + Task 4.4):

Task Topic:

Design Thinking Process Project: Communication Design Collaborative Project

Theme:

Communication Design for addressing SDG Goals:

The United Nations conceived the Sustainable Development Goals as a means to make our planet a better place to live. These were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.
Against this perspective, we need you to brainstorm and look for opportunities and come out with innovative solutions where communication design can now make a difference to address these issues.
The students work in groups of 2-3 and each group works on a different part of the problem space - users, media, problem areas, communication methods, etc.

You may choose any one of these SDG goals to work with:

The final solutions could be any of these:
a. Poster campaign to create awareness
b. An illustrated story book or a short video on the subject to create awareness
c. A simple card or board game to create interest in SDGs
d. Information Design for the SDGs to make it easily understandable
e. An animated short clip – (could be a music video with animated sketches)

Task 4.1

Task 4.1=4.1a+4.1b+4.1c
School Hours: 4 and Home hours 2
Done in groups of 3-4 at School and individually at Home

Task Title:

Understanding the problem area/space:

Task 4.1a. Ask Questions

School hours: 1, done collaboratively in groups of 3-4

1. Select one SDG to work with out of the 6
2. Ask the following questions about the above subject
What? Why? How? Whom? Where? When? etc.
3. How would you go about finding answers to the above questions?
4. Try to answer these questions from your own understanding
Output 4.1a: Make a mindmap of the selected SDG goal – sub-topics, issues, problems, areas, users, +ves and –ves, etc.

Task 4.1b. Primary Research:

School hours: 3, done collaboratively in groups of 3-4

The Primary research involves the following:
1. Identify all the users - primary and secondary users
2. Converse with the people involved with this activity to get a better understanding (take down notes), try to understand the activity from the user's point of view (empathise with the user)
3. Identify all the places/environment where this happens and go to the place and investigate (document these)
4. Identify the objects that are involved and understand how it works (document these)
5. Identify the communication methods that are used to convey information (document these)
6. Document through photography or sketching the different aspects of the problem being solved
7. Collate all the information and order it according to priority/importance
8. Identify issues or problem areas that can be solved
Output 4.1b: Make a presentation involving images and short text in form of a report or slides (around 6 to 10 pages or slides)

Task 4.1c. Secondary Research:

Home hours: 2, done individually

Secondary research as the name indicates is collection of information from secondary resources. These could be from books, publications, newspapers, talking to experts and the internet. As someone else has written or spoken about the subject, you need to keep note down the reference details.
1. Analyze your topic into sub-topics and take-up one of this for further research and understanding. It could be based on the type of SDGs, implications, lifestyle changes, concerns on education, health, livelihoods, etc.
2. Search for information on media that is accessible to you. Take down notes as

points. Mark important aspects
Output 4.1c: Collate the information involving images and short text in form of a report or slides (around 6 to 10 pages or slides)

Task 4.2

Task 4.2 = 4.2a + 4.2b
School Hours: 4 and Home hours 2
Done in groups of 3-4 at School and individually at Home

Task Title:

Analysing the problem to be solved:

Task 4.2a: Information Analysis (classification and affinities)

School hours: 4, done collaboratively in groups of 3-4

1.Summarize information from primary research as points and write this on separate sticky notes. These are your **observations**.
2. Classify the sticky notes related in some way into different categories (some may fit in multiple categories so replicate them)
3. Priorities the sticky notes within the categories according to its importance
4. Find connections (affinities) between the sticky notes and these are your **inferences and insights** from your study
5. Begin discussion within your group on the relevance of these inferences and see if they provide or indicate **opportunities for design** intervention to solve some of the problems
Output 4.2a: Make a chart of classifying the information collected according to the following:

Observations	Inferences/Insights	Design Opportunities
1.		
2.		

Task 4.2b: Make (a) Mind map of the problem space and (b) Problem Analysis

Home hours: 2, done individually

1. Analyse the problems using sticky notes or using mind mapping to classify and categorise them into buckets of problems to be solved
2. Make a list of them according to priority and write them down on sticky notes or on the mindmap with priority numbers
Output 4.2b: Classification/categorization of the problem + List of problems according to priority

Task 4.3

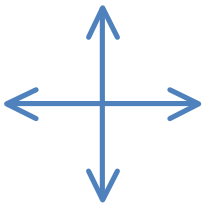
Task 4.3
School hours: 6 and Home hours: 3
Done in groups of 3-4 at School and individually at Home

Topic title:

Ideation on Creative Design Solution Possibilities + Shortlisting of Ideas

- Ideate on possible solutions by sketching these

- the solutions could involve the following media or outputs as possibilities:
a. Poster campaign to create awareness
b. An illustrated story book on the subject to create awareness
c. A simple card or board game to create awareness
d. Identity for the SDGs to make it easily noticeable & identifiable



1. Your group could brainstorm, Ideate on possible creative solutions and sketch these out + number or name these ideas
2. Make a list of possible solutions on this matrix of (easy to implement vs difficult to implement on the horizontal axis and low communication vs high communication on the vertical axis)
3. Collate all the good ideas together and short-list them according to their communication effectiveness and ease of implementation
Output 4b: Make a presentation of these in 3 slides (alternate sketches + Matrix + short-listed idea)

Task 4.4

Task 4.4
School hours: 6 and Home hours: 3
Done in groups of 3-4 at School and individually at Home

Topic title:

Design Solution Mock-ups + Prototyping

1. Select the best one out of your ideation and finalise it with details
2. Detail out the final selected solution: the details could be about its layout, composition, colours, text selection, listing of advantages/disadvantages and how to produce
3. Make a mock-up of your final idea on actual size using paper
4. Show the mock-up to potential users and get feedback
5. Incorporate suggestions from the feedback in your design
6. Make the final prototype
Output 4.4: Make a presentation of these in 3 slides (mock-up + feedback + details)

Task 4.5

Task 4.5
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

Prepare a presentation (of 6-8 minutes duration) to include all the stages of your project:
a. Title of the System Design Project or Problem Statement
b. Team members
c. Summary/content listing of your presentation
d. Insights from Primary and Secondary Research
e. Major design opportunities
f. Restatement of the problem / Design Objectives / Design Goals
g. Alternate Concepts (sketches + quick scenarios + concept models)
h. Final Concept and its unique features

i. Process, Form or Interface development and detailing
j. Prototype /Mock-up (optional)
k. User feedback on your final solution
l. Future steps and suggestions
m. Full References (Learn how to do references)
n. Acknowledgments – to all who have helped
Output 4.5: A presentation (6-8 minutes – roughly 15 to 25 slides) explaining the Project outcome along with Process

Reflection:

Questions to ponder:
- What are the interesting phases of the Design Thinking process that you liked?
- Can you apply what you learnt by solving communication design problems addressing SDGs to other situations – starting at your home or neighbourhood?
- Will you share this information on the use of the Design Thinking Process with others – like your friends and cousins?

Self Assessment:

Assessment Criteria (Task 4.1 + 4.2 + 4.3 + 4.4) - Assess yourself:

- Identifies the key issues and has a good understanding of the problem area based on secondary and primary research (Group + individual task)

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

- Analysis of the communication problem was done well with proper categorisation and assigning priorities. (Group + individual task)

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

- Comes out with creative innovative several alternate ideas along with sketches (Group + individual task)

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

- The mock-up of the prototype of the final concept was done well +incorporating feedback from the users (Group + individual task)

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

- The final presentation showing the design process and the final solution was done well (Group + individual task)

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

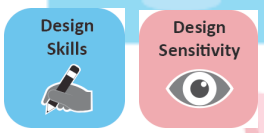
Other References:

Other suggested References:
1. Design Thinking Process - explained with an example:
https://www.youtube.com/watch?v=uRtAzzitBmA
2. Design Thinking Framework - a short video:
https://www.youtube.com/watch?v=LhQWrHQwYTk
3. Communication Design
https://www.dsource.in/course/designed-coursework-visual-communication

5.0 **Module 5**

Fundamentals of Product Design:

18 hours (12 in school and 6 at home)



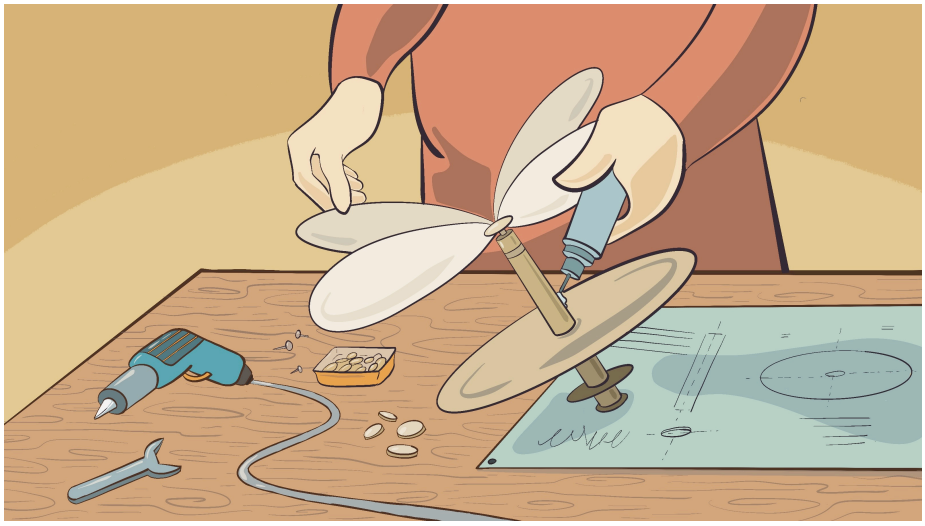
Exposure 1	- Elements of Form
Exposure 2	- Design Inspirations from Nature and design for the environment
Exposure 3	- Product and System

Overall Task	**Observation and Problem Identification**
Task 5.1 (at School + Home)	- Understanding Form
Task 5.2 (at School + Home)	- Representation and Analysis of Form
Task 5.3 (at School + Home)	- Nature and Design
Task 5.4 (at School + Home)	- Simple Product Design
Final Output	- Sketches, Slides and Presentation
	+ Reflections, Self Assessment and References

5.0 **Module 5**

Fundamentals of Product Design

18 hours (12 in school and 6 at home)



Introduction

Product Design is the design of useful products with both functional as well as formal considerations. It involves a creative and innovative problem-solving process with concern for the user, aesthetics, materials, process, technology and environment.
Product design has a wide variety of applications: consumer products, medical devices, furniture, jewelry, automobiles, toys, mobiles, sports equipment, etc. As a product designer, you could be designing any of these and making a difference in improving the quality of life.

Aim of the Course:

To expose school children (Grade 11) to basic fundamentals of Product Design and the principles of Product Design. It should create an interest in this field, nurture their sense of curiosity, and motivate them to explore and discover this area. The students should be able to be more sensitive towards the various products they see around them. They will be able to have a deeper understanding of a product in relation to the user, its immediate environment, and the functions it provides. With this knowledge and understanding we believe that the students will be equipped to take various product-related design challenges in the present day.

Place:

Place: Task 5.1, 5.2, 5.3 and 5.4 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, A3 Size papers, Color Pencils and Color Pens, Cardboards/ Foam Boards, sandpaper, poster colours, and Computers/Laptops for representations and making presentations (if available, but not necessary)

Exposures

Exposure1: Understanding Form
Story of form and form attributes. A presentation on how the form has always been an expression of an individual in relation to the social and economical context. Four slides on attributes of form talking about radii manipulation, color and volume.
Exposure 2: Representation and Analysis of Form
Exposure 3: Nature and Design
Exposure 4: Simple Product Design

Design Thinking & Innovation Process involvement:

This task involves the following phases of the DT&I Process:
Phase 1. Observe/Empathise/Research (observation of Product features)
Phase 2. Understand/Analyse/Define (analyzing different product aspects)
Phase 3. Ideate/Alternate/Create (trying creative alternatives)
Phase 4. Build/Prototype/Detail (making the output 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 5

Task 5 = 5.1 + 5.2 + 5.3 + 5.4
School Hours: 12, Home hours: 6

Task 5.1a

Task 5.1a:
Home Hours: 2, done individually

Task Title:

Understanding form

Take 10-12 different images of cars/scooters from the internet. Take prints of the images and place them on a big sheet with a matrix of softness and sharpness at two ends.

Discuss with students why certain cars/scooters were placed in the categories. Discuss the properties in the objects that represent these qualities of Softness and Sharpness.

NB: Task 1a is not being assessed.

Task 5.1b

Task 5.1b:
School Hours: 2 done individually

Topic title: Elements of form
1. Make three squares (10cm x 10 cm)

2. Transform the square shape (A) to a soft (could be organic form) form and the square shape (C) to a sharp-edged form (could be geometric form)
3. Placing the perfect square (B) in between, make 7 transitional forms between (A) and (B) and 7 transitional forms between (B) and (C)
4. Trace the final form 17 forms on cardboard and cut out the forms
5. Place them on a vertical rod or string
6. You can explore the materials of the cut-out. Students can also paint the form in a gradation or wrap the form with a tensile material

Output 5.1b: Cutouts of the 17 transitional forms on a vertical rod/string

Task 5.2

Task 5.2:
Home hours: 2, done individually

Task Title:

Representation and Analysis of Form

Task objectives:
- In Depth product Analysis
- Drawing / Rendering Skills

This task is mainly to observe details of form and analyze its function/purpose and in addition make a sketch of it.
1. Photo document any one electric appliance at home (could be Fridge, Toaster, Mixer, Fan, etc)
2. Look closely at the electric appliance
3. Make note of various details, functions, parts, and forms
4. Note: Students do not disassemble the product while doing the assignment and do it under adult supervision
5. Find out what interests you/is interesting about the product
6. Think about what the designer had thought while designing
7. Discover if any of its forms or functions are derived from occurrences in nature
8. Make quick sketches of how it can be improved
9. Make one final sketch of the product as it is, along with different parts and uses

Output 5.2: Documentation of the product along with analysis along with sketches

Task 5.3

Task 5.3:
School Hours: 4 and Home hours: 2, done individually

Task title:

Nature and Design

Task Objective
- Form abstraction and representation
- Drawing/ rendering skills

Topic title: Redesign of a simple product like your pen set by taking inspiration of nature (the flow of wind and water)

You take the above product and explore possibilities of taking inspiration from nature and redesigning the product in terms of its function/ form/ colour/ attributes etc. This should lead to a deeper understanding of the product.

1. Select a product to redesign – your pen set (2 pens gel + ink)
2. Look at inspiration from objects, plants and living beings shaped by the play of wind and water
- examples could be sand dunes, rock surfaces, lotus flowers, fish like dolphins, birds like cranes, etc.
3. compile images from these for inspiration (you may use internet for this task)

4. Categorise these images into groups and look out for the relevant curves or surfaces (this exercise is also called creating a **Mood Board**)
5. Using this as inspiration, sketch at least different 5 concepts of pens
6. Select one concept
7. Refinement of the selected concept by detailing the features
8. The final sketch, a pencil or pen rendering of the final design

Output 5.3: Prepare a 10 slides presentation that shows the process followed

Task 5.4

Task 5.4:

School Hours: 6, done in groups of 3-4

Task title:

Simple Product Design

Task Objectives

- Product analysis
- Problem identification
- Concept development
- Drawing/ rendering skills
- Presentation

Task Topic: Redesign of an Object that you take to School

In this task you'll design a simple product using the design process of observation, analysis, ideation, sketching details and making a presentation.

1. Choose one simple product that you carry with you to school (for example: water bottle, carrying bag, umbrella, tiffin box, watch, etc.)
2. Write a short brief (around 10 sentences) on what you like and what you do not like about the product
3. Exchange the brief with your friend
4. Do a deep diving exercise to understand the friend and the product better.
5. Write a redefined brief understanding the key problem/ opportunity area for design intervention
6. Identify problem/ gap areas / opportunity areas
7. See if inspirations from nature could be used for its improvement
8. Sketch 5 to 7 concepts
9. Discuss and present it to your friend/client
10. Improvise on the product after feedback from the friend
11. Try and make a mock model
12. Final sketch, a pencil or pen rendering of the final design.

Output 5.4: Prepare a 5 slides presentation that shows the process followed

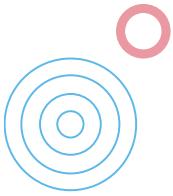
Reflection:

Questions to ponder:

- What are the most interesting phases of the Simple Product Design process that you liked?
- Can you try to come with ideas to redesign simple objects and artifacts that you find in your immediate surroundings like home, neighborhood and school?
- Will you share this information on the use of the Design Thinking Process and innovation with others – like your friends and cousins?

Self Assessment:

Task 5.1b
Understanding Form
(Individual Assessment)



Assessment Criteria (Task 5.1b) – Assess yourself:

Understanding and Application:

- The students were able to understand the basic concepts of form and its attributes and apply their understanding to the assignment provided

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

Involvement/Participation:

- The students actively participated in the discussion/task and tried different exploration

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

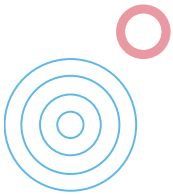
Skill Demonstration:

- The students were able to work with new materials and create good finished quality models.

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Self Assessment:

Task 5.2
Representation and Analysis of Form
(Individual Assessment)



Assessment Criteria (Task 5.2) – Assess yourself:

Product Analysis

- The students explored enough in terms of analysing the products.

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Involvement/Participation

- The students actively participated in the discussion/task and tried different explorations

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Skill Demonstration

- The rendered drawings were up to mark in terms of the perspective/ light/form

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Documentation/Communication
- How was the final presentation made and the quality of presentation

☐ ☐ ☐ ☐ ☐
Beginning *Promising* *Excellent*

Self Assessment:
Task 5.3
Nature and Design
(Individual Assessment)

Assessment Criteria (Task 5.3) – Assess yourself:

Critical Thinking
- The student has been able to understand the product, its attributes and relate it to the inspiration he has chosen to work with

☐ ☐ ☐ ☐ ☐
Beginning *Promising* *Excellent*

Concept/Form Development
- The student has applied his initial form understanding to create the product inspired from nature

☐ ☐ ☐ ☐ ☐
Beginning *Promising* *Excellent*

Involvement/Participation
- The student has demonstrated understanding, explored and pushed his boundaries and participated with teachers and peers

☐ ☐ ☐ ☐ ☐
Beginning *Promising* *Excellent*

Skill Demonstration
- The student has shown great skills in representing his final concept product

☐ ☐ ☐ ☐ ☐
Beginning *Promising* *Excellent*

Presentation/Communication
- The student has been able to communicate his idea to his peers and teacher and the presentation outlined the process in detail

☐ ☐ ☐ ☐ ☐
Beginning *Promising* *Excellent*

Self Assessment:
Task 5.4
Simple Product Design
(Group Assessment)

Assessment Criteria (Task 5.4) – Assess yourself:

Problem Analysis
- The student has been able to get a good understanding of the problem area and grasp the client requirement and propose a redefined brief

☐ ☐ ☐ ☐ ☐
Beginning *Promising* *Excellent*

Concept Development
- The student is able to make solutions that adhere to the specified problem area

☐ ☐ ☐ ☐ ☐
Beginning *Promising* *Excellent*

Involvement/Participation

- The student has demonstrated understanding, explored and pushed his boundaries and participated with teachers and peers

☐ ☐ ☐ ☐ ☐

Beginning *Promising* *Excellent*

Skill Demonstration

- The student has shown great skills in representing his final concept product

☐ ☐ ☐ ☐ ☐

Beginning *Promising* *Excellent*

Presentation/Communication

- The student has been able to communicate his idea to his peers and teacher and the presentation outlined the process in detail

☐ ☐ ☐ ☐ ☐

Beginning *Promising* *Excellent*

Other References:

Other suggested References:

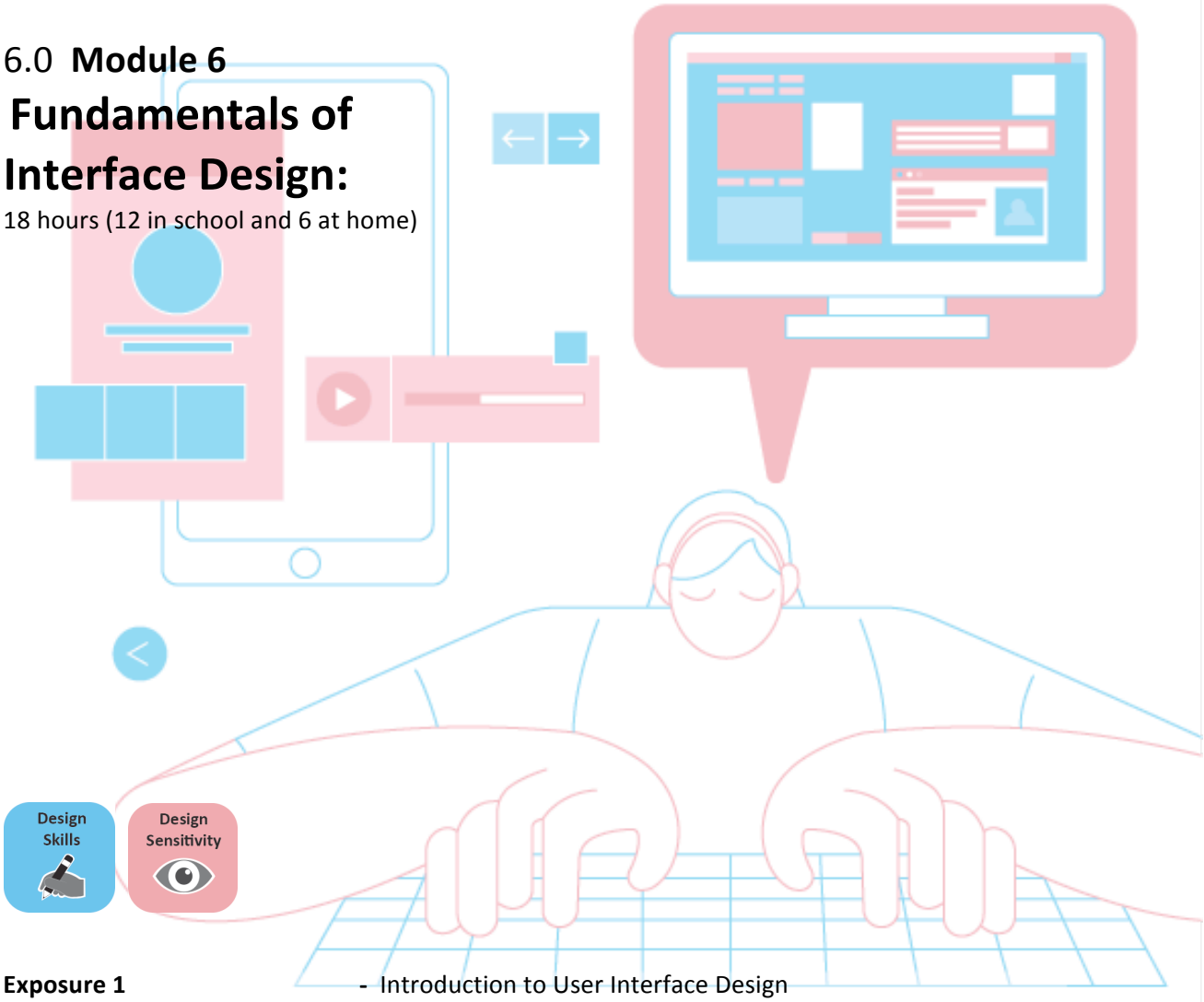
1. Product Design 1:
https://www.dsource.in/course/product-design-1

2. What is Product Design?
https://www.youtube.com/watch?v=JNzvLWC2cGQ

6.0 **Module 6**

Fundamentals of Interface Design:

18 hours (12 in school and 6 at home)



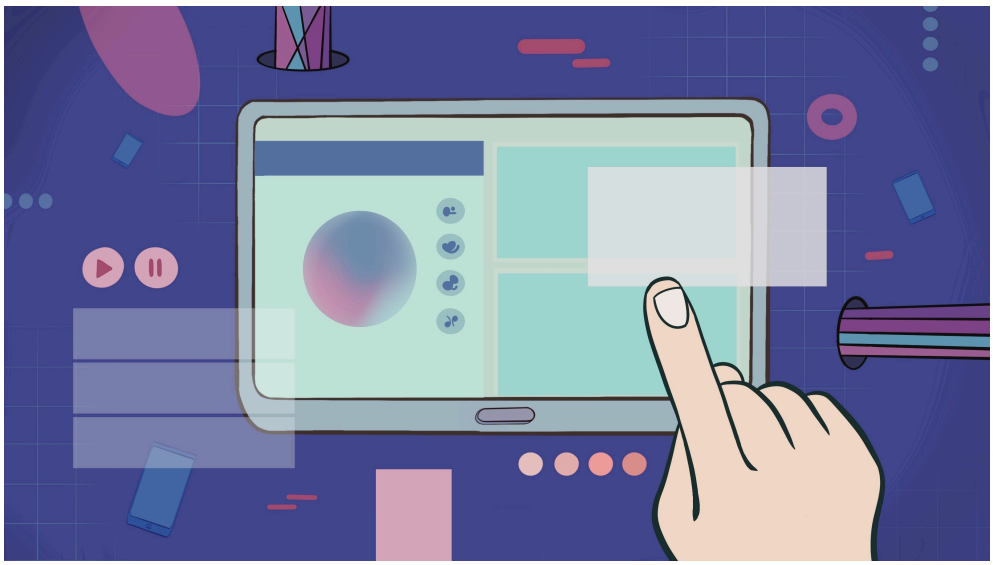
Exposure 1	- Introduction to User Interface Design
Exposure 2	- Ergonomics
Exposure 3	- User Centered Design

Overall Task	**Observation and Problem Identification**
Task 6.1 (at School + Home)	- Understanding User Interface
Task 6.2 (at School + Home)	- Developing Graphical User Interface
Task 6.3 (at School + Home)	- User Research
Task 6.4 (at School + Home)	- Product Interface Design
Final Output	- Make presentations with appropriate visuals + Reflections, Self Assessment and References

6.0 **Module 6**

Fundamentals of Interface Design

(12 hours at school + 6 hours at home)



Introduction

Interface Design is the design of an interface between a user and a digital device. It involves designing digital products, digital systems and digital services. Interface design takes into consideration the ease of use, communication abilities, personalization and function. It makes use of text, images, audio, animation, interactivity and touch.
Interface designers work in the digital computing industry to make their products and services easier, aesthetic and functional to use.

Aim of the Course

Aim of the course:
To expose school children (Grade 11) to basic fundamentals of Interface design. It should make students aware of how users interact with products and applications. The course will teach students about how design can help in making conscious decisions for users and how conscious design itself can help ease the decision making process for the users with the least cognitive load. It will also explore the ideas of user experience relating to digital products and empathy/user-centered design.

Place:

Place: Task 6.1, 6.2, 6.3 and 6.4 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, A3 Size papers, Chart papers, Color Pencils and Color Pens. Students may use digital devices like computers or tablets (if available, but not necessary)
Students might require further resources like printers for taking our prints for references and smartphones to take pictures.

Exposures

Exposure 1: Introduction to User Interface Design
- User
- What is interface
- Different types of User Interface: Product interface, Command interface, Graphic user interface, Voice controlled UI, Gesture based UI

Exposure 2: Ergonomics
- User and experience
- What is ergonomics
- Factors defining ergonomic
- Ergonomics in products

Exposure 3: User Centered Design
- User- centered design
- Understanding user
- User journey
- Product and interface

Design Thinking & Innovation Process involvement:

This task involves the following phases of the DT&I Process:
Phase 1. Observe/Empathise/Research (observation user interactions)
Phase 2. Understand/Analyse/Define (analysing user requirements + organizing information for interface design)
Phase 3. Ideate/Alternate/Create (trying creative alternatives)
Phase 4. Build/Prototype/Detail (making the output 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 6

Task 6 = 6.1 + 6.2 + 6.3
School Hours: 12, Home hours: 6

Task 6.1
(done at Home)

Task 6.1:
Home hours: 2, done individually

Topic Title:

Observe and analyse the Interface of a Digital Device at home:

1. Select a digital device or product of daily use at home with an interface to interact with for operating/using it (these could range from mobile phone, to digital clocks, to TV, washing machines, etc.)
2. Study the interface and note down its elements – text, images/icons, audio, buttons, knobs, displays, etc.
3. Make a chart with the sequence of steps required to operate it
4. Note down point on how the interface could be improved and made easy to operate

Output 6.1: Analysis of the interface as notes and points on how it could be improved

Task 6.2
(done at Home)

Task 6.2:
Home hours: 4

Topic Title:

User Research:

Understanding user (Children / Elderly/ Parent)
The digital device for this task is the remote control of the TV.

1. Converse with your target user on their experience with the TV remote product
2. Converse with a minimum of 5 users on both quantitative and qualitative aspects (users at your home and neighbourhood)

Quantitative aspects examples:
- *How much time do you spend watching tv?*
- *How many remotes do you have?*
- *Which buttons do you use most often?*
- *How do you access your favourite channels?*
- *etc.*

Qualitative aspects examples:
- *What are your problems while using a remote?*
- *What are the features you want on a remote?*
- *Do you like the quality of the remote?*
- *Is it easy to use?*
- *etc.*

Remember to ask why they have specific problems and try to get to the source of the problem (refer to research methodologies)
3. Do a brief analysis of the data collected from the target audience

Understanding interface
Analyse the interface of the TV remote
1. Use the remote to navigate through different channels/ functions and identify problems
2. Identify the basic interface
3. Identify how easy it is to reverse your actions
4. Identify elements you don't use
5. Identify buttons you did not understand
Output 6.3: Summary of User Research (both quantitative and qualitative) + Analysis of the Remote Interface

Task 6.3
(done at School + Home)

Task 6.3:
School Hours: 4, done in groups of 3-4

Topic Title:

Product Interface Design:

Task Objective
- Understand user
- Understanding product interface
- Research / analysis /synthesis
- Developing project brief
- User interface design

1. Make a group of 3 to 4 according to users
2. Exchange your findings on the remote control
3. Identify common insights/ problems/ findings
4. Make an ergonomic chart of the product
5. Redefine your brief
6. Redesign the remote control in terms of its form and interface
Output 6.4: Make a final render of the product with the necessary UI

Task 6.4
(done in School)

Task 6.4:
School Hours: 2, done individually

Topic Title:

Developing Visual Icons for Graphical User Interface:

Task Objective:
- Understand graphic user interface
- Analysis and development of symbols

In an interface, visual Icons make it easier to recognize a facility or function without the use of a language.

1. Develop 3 icons/symbols for any of these phone/mobile applications (note that the students should be encouraged to develop their own without access to the internet)
- children
- pet
- adults
- banking
- market
- social network
- games
- copy
- paste
- erase

2. Do note that the design of icons is quite simple and made easy to recognize
3. First sketch several alternate ideas
4. Finalise and make it using simple shapes. It could be black and white or in colour

Output 6.4: Present the final design

Task 6.5

(done in School)

Task 6.5:

School Hours: 6, done in groups of 3-4

Topic Title:

Developing an Interface in the Digital Space:

Task Objective
- Research / analysis /synthesis
- User experience mapping
- Information architecture
- Group collaboration
- Graphic user interface design

Option 1

Your school is starting a social site with different club activities
Design a social app/ platform for the students to interact and experience it online.

Option 2

Studying from home is the new norm.
Your school is digitizing every subject in school.
Design an interface for students to study and experience the platform.

1. Choose your Topic
2. Understand the content of the Topic by making a mindmap of all its related aspects
3. Identify the different users and the different ways the user would need this information
4. Converse with the different users and understand their requirements with respect to the problem you are solving
5. Prioritize your content and classify according to its importance level

(information hierarchy)
6. Ideate of different possibilities for making a useful digital space for your chosen topic
7. Decide whether your solution would be accessible on a desktop/laptop, mobile or on both – choose the platform
8. Make the content architecture (architecture defines the structure of the interface and how different contents are linked to each other)
9. Figure out the navigation flow of the content of the interface
10. Take a chart paper and make the wireframe of each of the interface screens
11. Make a paper prototype of your solution by drawing each of the interface screens on different pieces of paper with shape and size of the screen
12. Make high fidelity (as much as real) of the different interface screens
13. Do a walkthrough of the solution by presenting the screens one after another as one would navigate through the different web pages

Output 6.5: Each of the groups presents the walkthrough of the final solution

-

References

How to make a website:
https://www.youtube.com/watch?v=UaVOBy13beo

Reflection:

Questions to ponder:

- What are the most interesting phases of the Interface Design process that you liked?
- What area of application would you like to make use of interface design?
- Would you like to become an interface designer/ interaction designer/ information architect?

Self Assessment:

Task 6.1
Understanding Interface Elements
(Individual Task)

Assessment Criteria (Task 6.1) – Assess yourself:

Concept Development:

- The students were able to study the interface and note down its elements

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

Involvement/Participation:

- The students actively analyzed the interface and made suggestions on how it could be improved

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

Self Assessment:

Assessment Criteria (Task 6.2 + 6.3) – Assess yourself:

Task 6.2 + Task6.3
Understanding Form
(Individual Task)

Concept Development:
- The students explored enough in terms of developing the icons

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

Involvement/Participation:
- The students actively participated in the discussion/task and tried different exploration

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Self Assessment:
Task 6.3
User Research and Interface Design
(Group Task)

Assessment Criteria (Task 6.2) – Assess yourself:

Research Analysis:
- The student did the research thoroughly and analysed the gathered data from the target audience/of the user

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

Interface Analysis
- The student has done the analysis thoroughly of the product

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Concept Design
- The students (as a group) have developed enough ideas and concepts leading to redesigning of the remote interface

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Involvement/Participation
- The students actively participated in the discussion/task and tried different exploration

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Final Presentation
- The final work submitted documents the whole process well and the final design is well finished

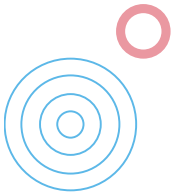
☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Self Assessment:
Task 6.4
Developing Icons
(Individual Task)

Assessment Criteria (Task 6.4) – Assess yourself:

Concept Development:
- The students explored enough in terms of developing the icons

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



Involvement/Participation:
- The students actively participated in the discussion/task and tried different exploration

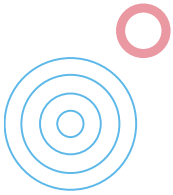
☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Self Assessment:
Task 6.5
Interface in Digital Space
(Group Task)

Assessment Criteria (Task 6.5) – Assess yourself:

Concept Design
- How well is the user experience represented by the group with the help of wireframe/flowchart

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



Graphical User Interface (GUI) Design
- How well are the visual cues, interface designed
- Whether the student has developed enough ideas and concepts

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Involvement / Participation
- The students actively participated in the discussion/task and tried different exploration

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Final Presentation
- The final work submitted documents the whole process well and the final design is well finished

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

Other References:

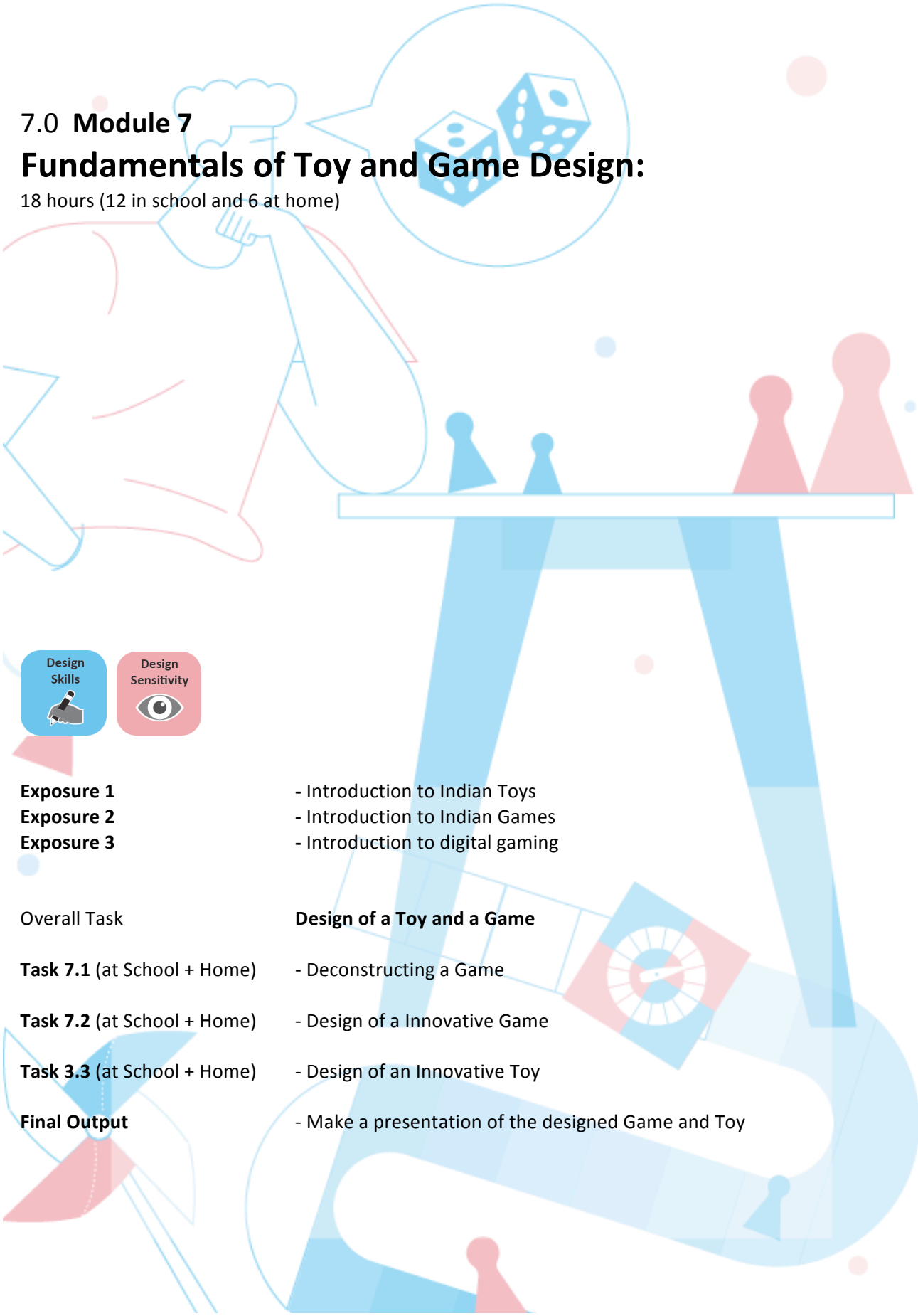
Other suggested References:

1. Product Information Design:
https://www.smashingmagazine.com/2018/01/comprehensive-guide-product-design/

7.0 **Module 7**

Fundamentals of Toy and Game Design:

18 hours (12 in school and 6 at home)



Design Skills

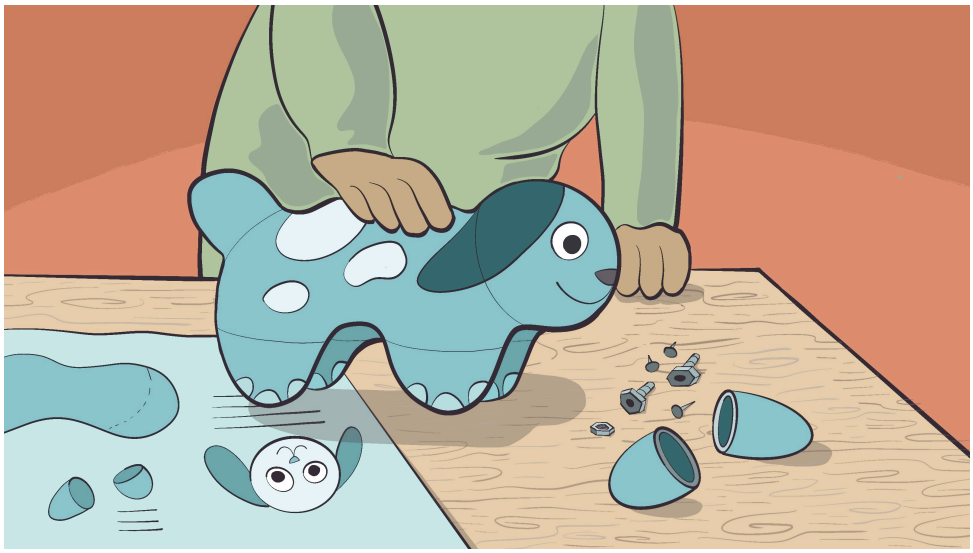
Design Sensitivity

Exposure 1	- Introduction to Indian Toys
Exposure 2	- Introduction to Indian Games
Exposure 3	- Introduction to digital gaming
Overall Task	**Design of a Toy and a Game**
Task 7.1 (at School + Home)	- Deconstructing a Game
Task 7.2 (at School + Home)	- Design of a Innovative Game
Task 3.3 (at School + Home)	- Design of an Innovative Toy
Final Output	- Make a presentation of the designed Game and Toy

7.0 **Module 7**

Fundamentals of Game and Toy Design

(12 hours at school + 8 hours at home)



Introduction:

Play is an integral part of every childhood. It is essential for child's development and for learning life skills. Play is how children learn to have fun, to socialize, to think, to solve problems and to work. Play connects children with their imagination, their environment, and the people around them.
Toys and Games are tools children use in play. It impacts the learning and development of children. Toys and Games value enhance a child's natural ability to engage in imaginative and meaningful play. Toys and Games vary across countries, cultures, and families.

Aim of the Module:

The aim is to develop a fun and creative approach for students to understand toy and game design and work in the growing needs and aspirations in the field of education and entertainment. The students will fuel their innovation towards creative conceptualisation, character design, materials, narrative building, strategy development and lastly the play and reward cycle.

Place:

Place: Task 7.1, Task 7.2 and Task 7.3 are done at School and Home

Grouping:

This exercise is done in groups of 3 to 4 students.

Equipment:

Sketchbooks for sketching and taking notes, A3 Size papers, Chart papers, Color Pencils and Color Pens, cardboard, coloured sheets, markers, waste materials and Computers/Laptop for representations/presentations.

Exposures:

Exposure 1: Introduction to Indian Toys

Exposure 2: Introduction to Indian Games

Exposure 3: Introduction to digital gaming

Design Thinking & Innovation Process involvement:

This task involves the following phases of the DT&I Process:
Phase 1. Observe/Empathise/Research (observation user interactions)
Phase 2. Understand/Analyse/Define (analysing user requirements + organizing information for toy/game design)
Phase 3. Ideate/Alternate/Create (trying creative alternatives)
Phase 4. Build/Prototype/Detail (making the output 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 7

Task 7 = 7.1 + 7.2 + 7.3
School Hours: 12, Home hours: 6

Task 7.1

Task 7.1:
Home hours: 2, done individually

Task Title:

Deconstructing a Game

Task Objective
- Understand game components and structure

In this task, the chosen game is analysed to understand its structure and components
Suggested Process:
1. Choose any one game you play (could be physical or digital)
2. Write why you enjoy the game?
3. What are the characters/your role in the game?
4. What are the constraints in the game?
5. What are the success and rewards?
6. What and when are choices provided in the game?
7. Mention one or two strategies used in the game
8. How does the game end?

Output 7.1: Make a 8 -10 slides presentation with text and images on deconstructing the game

Task 7.2

Task 7.2:
School Hours: 6, done in groups of 3-4 and Home hours: 2, done individually

Topic title:

Design of a Card/Board Game based on Play and Learn Activities concerning a social / environmental issue

Task Objective
- Understand user
- Understand Empathy
- Simplifying concepts
- Making learning fun
- Design of Characters/ Elements in the Game
- Apply game analogy

Play and Learn:
- Play means that the game could be playful, challenging, engaging
- Learn means that one should understand a concept while playing the game

Task: Design a Card or a board game based on a social or environmental issue (could be gender equality, drug abuse, cleanliness, health and wellbeing, care for elderly, pollution, alternate energy, etc.)
The game topic should include learning in addition to having fun

Suggested Process:
1. Make a mindmap of the components of the chosen social /environmental issue
2. Brainstorm for ideas on possibilities to make a game on the subject
3. Design the basic plot/ narrative of the game, the strategy for the game, then the game plan (how it is going to be played), procedure to move forward in the game, elements/characters in the game, design the setting or the environment.
4. Design the levels, rules, rewards, choices, etc.
5. Make a mock-up (a rough prototype) using cardboard/thick paper, cutting it to size and sketching on it
6. Get another group from your class to play the game and give you feedback
7. Improve the game based on the feedback
8. Do the final design prototype (possibly using a computer). You might need to design a brochure to explain the game

Final Output 7.2: Demonstrate the game to the whole class using your prototype

Task 7.3

Task 7.3:
School Hours: 6, done in groups of 3-4 and Home hours: 2, done individually

Task Title:

Design an 'Innovative Mobile Toy to Experience & Learn any Concept'

Task objectives:
- Translate concepts to tangible materials
- Bring fun in creativity
- Understanding material and basic mechanics
- Model making

The concept could be from any field/subject
- Innovative means that the toy has something new in its design
- Mobile toys are those that can move or make a movement – Wheeled toys, spinning toys, Climbing down toys, swinging toys and such
- experience means that the toy could be playful/joyful/enjoyable
- learn means that one should be able to understand a concept while playing with the toy

Clue:
- You could come up with a new design for a toy with a surprise built into it. There is a surprise when you use or move the toy
(for example: it can make a funny movement, make a noise, does something unusual)

Suggested Design Process:
1. You could follow the design thinking process to solve this problem: observe, understand, ideate, build/do and test
2. Identify the concept to research (you do a mind-map of possible concepts)
3. Understand how the concept is applied physically
4. Convert the principle to get a playful response (you could do brainstorming for ideas)
5. Make several sketches of your ideas
6. Select from these ideas and see if you can combine or modify them to make it better
7. Make a mockup for the toy (you could make use of recyclable materials)
8. Make a final model with the finished components/parts

Output 7.3: demonstrate the final model to the classmates

Students are encouraged to use simple readily available materials like bamboo, crushed newspapers, ice-cream sticks, rubber bands, jute, coir, and recycled materials.
A cost constraint could be given to limit students from spending extravagantly.

References:

Indian Games:
https://www.dsource.in/resource/indian-games

Indian Toys:
https://www.dsource.in/resource/indian-toys

Reflection:

Questions to ponder:

- What are the most interesting phases of the Game / Toy Design process that you liked?
- Was the task of designing a Game and Toy challenging and engaging?
- Can you design interesting Games and Toys concerning other issues?
- Would you like to become a Toy designer/ Game designer?

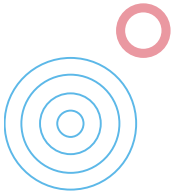
Self Assessment:
Task 7.1
De-constucting a Game
(Individual Task)

Assessment Criteria (Task 7.1) – Assess yourself:

Game Analysis (depicted through presentation):

- Whether the students explored enough in terms of analysing the game.

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



Involvement/Participation:

- The students actively participated in the discussion/task and tried different exploration

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

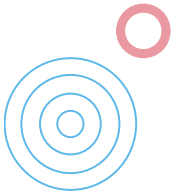
Self Assessment:
Task 7.2
Design of Play and Learn Games
(Group + Individual Task)

Assessment Criteria (Task 7.2) – Assess yourself:

Learning' objective:

- The extent to which the game leads to meeting the 'learning' objective of the class

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



Game design and presentation (prototype):

- The extent to which a student integrated different elements of game (*like characters, constraints, rewards, choices)*

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

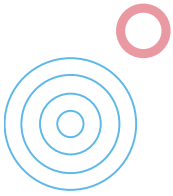
Self Assessment:
Task 7.3
User Research and Interface Design
(Group + Individual Task)

Assessment Criteria (Task 7.3) – Assess yourself:

Application:

- The extent to which the student was able to apply the chosen concept to the toy design

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



Prototype Model making

The extent to which the idea of toy is depicted through a working model

☐ *Beginning* ☐ ☐ *Promising* ☐ ☐ *Excellent*

8.0 Module 8

Design Thinking Process Project: Product Design Collaborative Enterprise Start-up Project

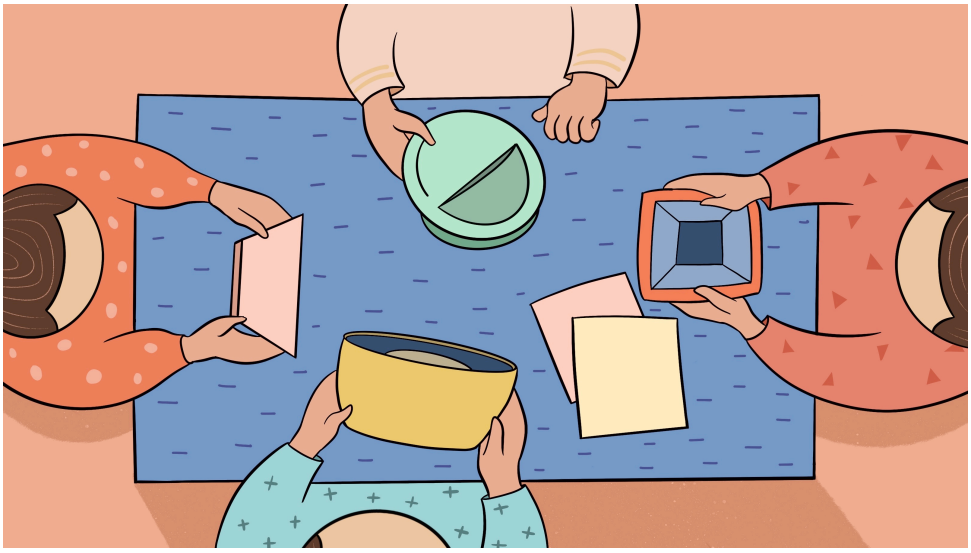
27 hours (18 in school and 9 at home)

Exposure 1	- Introduction to Design Thinking Process for product Design
Exposure 2	- Introduction to analysis of products features
Exposure 3	- Case study of a project in product Design
Overall Task	**Design of Smart Everyday Objects + an Enterprise Start-up**
Task 8.1 (at School + Home)	- Understanding the problem to be solved – Primary and Secondary Research
Task 8.2 (at School + Home)	- Analysis of the problem
Task 8.3 (at School + Home)	- Ideating, sketching and alternatives
Task 8.4 (at School + Home)	- Creating prototypes
Task 8.5 (at School)	- Business Model
Task 8.6 and Final Output	- Final Design Solution Presentation and Documentation + Reflections, Self Assessment and References

8.0 **Module 8**

Design Project: Product Design Collaborative Enterprise Start-up Project

(18 hours at school + 9 hours at home)



Introduction

This module introduces the students to the different stages of the design thinking process for solving a Product Design problem.
The students get to design different aspects of the product looking at its form, function, configuration, material, technology, etc.
The students are encouraged to make use of their learning from the previous modules on Product Design and Interface Design to solve this problem.

Aim of this Module

This design project will introduce students to the different stages of the design thinking process while solving a product design problem. The students would use the following process: observe, understand, ideate, build/do and test or reflect.

This design project will also have students working collaboratively together to start an enterprise with the product that they conceive. The students will need to put together a business plan and make a pitch presentation for their final design solution.

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 for product Design **Exposure 2:** Introduction to analysis of products features **Exposure 3:** Case study of a project in product Design
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: 27, Home hours: 9

Task 8:

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

Task Topic:

Design Project:
Product Design Collaborative
Enterprise Start-up Project

Theme:

Design of a Smart Everyday Product:

By combining smart technologies (sensors, displays, connectivity, data) with products can increase the functionality of the product to bring in convenience, flexibility, personalization, remote operation, energy-efficient, etc.
Inputs from the previous modules on Product Design and Interface Design will help you solve this problem.

Common examples are the smart lighting, Smart Traffic lights, Smart fridges, etc. The concept of smartness has also been extended to Smart Homes, Smart Schools, Smart Factories, Smart Streets, Smart Cities, Smart Vehicles, etc.

You can choose any of these products and ideate how their functions could be improved and enhanced by integrating with smart technologies:
a. Bicycle – navigation, lighting, etc.
b. School Bag – Storage indicator, reminder, etc.
c. Main Door – security, identity, etc.
d. Wallet – accounting, expenditure, etc.
e. Books – Highlighting, summary, etc.
f. Mirror – reminder, etc.
g. Any other product of your choice

The Challenge:
- is to choose an everyday simple product and integrate it with the required smart features to extend its usage and purpose.
- the process includes the following: research, understand needs, analyse requirements, ideate alternate solutions, finalise and build prototypes, get feedback, formulate a business plan and make a pitch presentation.

The students work in groups of 3-4, both collaboratively and co-operatively together. They share the workload and are partner team members in solving the different stages of the problem.

Task 8.1

Task 8.1 = 8.1a + 8.1b + 8.1c
School Hours: 4, done collaboratively in groups of 3-4, and Home hours 2, done individually

Topic title:

Defining the Problem to be solved:
Design of a Smart Everyday Product

Task 8.1a: Make Selections and Ask Questions
School Hours: 1, done collaboratively in groups of 3-4

1. Select the product that you would like to design for this project
2. Investigate smart technologies that you may find useful for the project
3. Ask the following questions about the above the object
- What? Why? How? Whom? Where? When? etc.
4. Make sketches about the chosen existing object from different viewpoints

Task 8.1b: Secondary Research
Home hours 2, done individually

Secondary research as the name indicates is collection of information from secondary resources. These could be from books, publications, newspapers, talking to experts and the internet. As someone else has written or spoken about the subject, you need to keep note down the reference details.
1. Understand your chosen product and its components. You could make a mid-map of the product and its connections
2. Compare it with similar products and try to find out its advantages and disadvantages
3. Search for information on a media that is accessible to you. Take down notes as points. Mark important aspects
Output 8.1b: Collate the information involving images and short text in form of a report or slides (around 4 to 6 pages or slides)

Task 8.1c: Primary Research
School Hours: 3, done collaboratively in groups of 3-4

The Primary research involves the following:
1. Identify all the users - primary and secondary users who interact with the product
2. Converse with the people involved with this activity to get a better understanding (take down notes), try to understand the product use from the user's point of view (empathize with the user)
3.Understand how the object is used (document these),
4. Document through photography or sketching the different aspects of the problem being solved
5. Collate all the information and order it according to priority/importance
6. Identify issues or problem areas that can be solved
Output 8.1c: Make a presentation involving images and short text in form of a report or slides (around 4 to 6 pages or slides)

Task 8.2

Task 8.2 = 8.2a + 8.2b
School Hours: 4
Done in groups of 3-4 at School and individually at Home

Task Title:

Analysing the problem to be solved:

Task 8.2a: Information Analysis (classification and affinities)

School hours: 4, done collaboratively in groups of 3-4

1.Summarize information from primary research as points and write this on separate sticky notes. These are your **observations**.
2. Classify the sticky notes related in some way into different categories (some may fit in multiple categories so replicate them)
3. Priorities the sticky notes within the categories according to their importance
4. Find connections (affinities) between the sticky notes and these are your **inferences and insights** from your study
5. Begin discussion within your group on the relevance of these inferences and see if they provide or indicate **opportunities for design** intervention to solve some of the problems
Output 8.2a: Make a chart of classifying the information collected according to the following:

Observations	Inferences/Insights	Design Opportunities
1.		
2.		

Task 8.2b: Make (a) Journey/Sequence Map of the activities

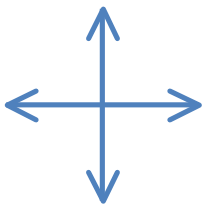
Home hours: 2, done individually
1. List all the activities that are required for the mobile facility/service
2. Make the sequence in which the different activities need to be done
3. Note down the space requirements for each of these activities
Output 8.2b: Make a sequence map of the activities mapping it on the space available on the mobile vehicle

Task 8.3

Task 8.3
School hours: 6 and Home hours: 2
Done in groups of 3-4 at School and individually at Home

Topic title:

Ideation on Creative Innovative Design Solution Possibilities + Shortlisting of Ideas



- Ideate on possible solutions by sketching these
1. Your group could brainstorm, Ideate on possible creative innovative solutions and sketch these out + number or name these ideas
2. Make a list of possible solutions on this matrix of (easy to implement vs difficult to implement on the horizontal axis and low product idea vs great product idea on the vertical axis)

3. Collate all the good ideas together and short-list them according to their product effectiveness and ease of implementation
Output 8.3: Make a presentation of these in 3 slides (alternate sketches + Matrix + short-listed idea)

Task 8.4

Task 8.4
School hours: 6 and Home hours: 2
Done in groups of 3-4 at School and individually at Home

Topic title:

Design Solution Mock-ups + Prototyping

1. Select the best one out of your ideation and finalise it with details.
2. The final concept could involve any of the following:
- 2D/3D design Sketches + Physical Prototyping + Visualisation + 3D Models
3. Detail out the final selected solution: the details could be about its layout, form, colours, material selection, the listing of advantages/disadvantages and how to produce
3. Make a mock-up of your final idea – a scaled version
4. Show the mock-up to potential users and get feedback
5. Incorporate suggestions from the feedback in your design
6. Make the final prototype
Output 8.4: Make a presentation of these in 3 slides (mock-up + feedback + details)

Task 8.5

Task 8.5
School hours: 2
Done in groups of 3-4 at School

Topic title:

Business Model

Prepare a Business Model for the product to be made into an enterprise with a start-up as the beginning.
1. Use the following Business Model template to fill in the details
a. Key Partners of the Enterprise
b. Key activities of the Enterprise
c. Key resources for the Enterprise
d. Value of Product delivered to customer
f. Customer segment
g. Revenue Model of the Enterprise
2. Make use of these points to make a business model for your design enterprise (where you have to present the business viability of the new product)

Output 8.6: A Business Model for your enterprise in 2 slides

Task 8.6

Task 8.6
School hours: 4 and Home hours: 2
Done in groups of 3-4 at School and individually at Home

Topic title:

Design + Business Solution Final Presentation and Documentation

Prepare a presentation (of 6-10 minutes duration) to include all the stages of your project:

a. Title of the System Design Project or Problem Statement
b. Team members
c. Summary/content listing of your presentation
d. Insights from Primary and Secondary Research
e. Major design opportunities
f. Restatement of the problem / Design Objectives / Design Goals
g. Alternate Concepts (sketches + quick scenarios + concept models)
h. Final Concept and its unique features
i. Process, Form or Interface development and detailing
j. Prototype /Mock-up (optional)
k. User feedback on your final solution
l. Business model for your design enterprise
m. Future steps and suggestions
n. Full References (Learn how to do references)
o. Acknowledgments – to all who have helped

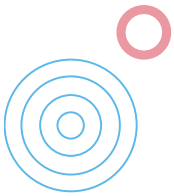
Output 8.6: A pitch presentation (10 minutes, roughly 20 to 30 slides) explaining the business model, design process and the final solution

Reflection:

Questions to ponder:

- What are the most interesting methods of the Design Thinking process that you found useful in solving the above problem?
- Can you apply what you learnt by redesigning products and artifacts around your home and neighbourhood to make them better?
- Will you collaborate and make use of the Design Thinking Process with others – like your friends and cousins to solve problems?

Assessment:



Assessment Criteria (Task 8.1 + 8.2 + 8.3 + 8.4 + 8.5 + 8.6) - Assess yourself:

- Identifies the key issues and has a good understanding of the problem area based on secondary and primary research (Group + individual task 8.1)

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

- Analysis of the problem was done well with proper categorisation and assigning priorities. (Group + individual task 8.2)

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

- Comes out with creative innovative several alternate ideas along with sketches (Group + individual task 8.3)

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

- The mock-up of the prototype of the final concept was done well +incorporating feedback from the users (Group + individual task 8.4)

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

- The students put together a viable business model for their design enterprise (Group task 8.5)

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

- The final presentation showing the business model, design process and the final solution was done well (Group + Individual task 8.6)

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

Other References:

Other suggested References:

1. Design Enterprise Project
https://www.dsource.in/course/collaborative-design-enterprise-project

Assessment Matrix:

Module 1.0: Fundamentals of Publication /Communication Design

Parameters / Achievement Levels	**1-2 BEGINNING**	**3-4 DEVELOPING**	**5-6 PROMISING**	**7-8 PROFICIENT**	**9-10 EXCELLENT**
Task 1.1a Identifying Elements of Composition (Individual assessment)	The student is yet to identify many aspects of the Elements of Composition and draw the layout of only the hidden grids on paper as lines.	The student poorly identified many aspects of the Elements of Composition and drew the layout of only the hidden grids on paper as lines.	The student moderately identified many aspects of the Elements of Composition and drew the layout of only the hidden grids on paper as lines.	The student fairly well identified many aspects of the Elements of Composition and drew the layout of only the hidden grids on paper as lines.	The student very well identified many aspects of the Elements of Composition and drew the layout of only the hidden grids on paper as lines.
Task 1.1b Visual Design of Publication (Group + Individual assessment)	The design of the publication is yet to be composed with proper layout and hierarchy of information.	The design of the publication was poorly composed with proper layout after considering aspects of hierarchy of information.	The design of the publication was moderately composed with proper layout after considering aspects of hierarchy of information.	The design of the publication was fairly well composed with proper layout after considering aspects of hierarchy of information.	The design of the publication was very well composed with proper layout after considering aspects of hierarchy of information.
Task 1.2a Analysis of Media (Group assessment)	Analysis of the different (media) is yet to be done	Analysis of the different (media) was poorly done after considering different factors of communications	Analysis of the different (media) was moderately done after considering different factors of communications	Analysis of the different (media) was done fairly well after considering different factors of communications	Analysis of the different (media) was done very well after considering different factors of communications
Task 1.2b Social Awareness Message (Individual assessment)	The design of the message for social awareness campaign is yet to be done	The design of the message for social awareness campaign was poorly done	The design of the message for social awareness campaign was moderately done	The design of the message for social awareness campaign was fairly well done	The design of the message for social awareness campaign was very well done

Task 1.3 Visual Story Book for Children (Individual assessment)	The Storybook for children is yet to be done. The understanding the process to solve a communication design problem is yet to be done	The Storybook for children was poorly done after understanding the process to solve a communication design problem	The Storybook for children was moderately done after understanding the process to solve a communication design problem	The Storybook for children was done fairly well after understanding the process to solve a communication design problem	The Storybook for children was done very well after understanding the process to solve a communication design problem

Assessment Matrix:

Module 2.0: Fundamentals of Moving Images

Parameters / Achievement Levels	**1-2 BEGINNING**	**3-4 DEVELOPING**	**5-6 PROMISING**	**7-8 PROFICIENT**	**9-10 EXCELLENT**
Task 2.1 Script of the Story (Group + Individual assessment)	The student: Needs to start creating a script	The script as well as the story-board was poorly conceived	The script as well as the story-board was moderately conceived	The script as well as the story-board was fairly well conceived	The script as well as the story-board was very well conceived
Task 2.1 Presentation of the Script (Group + Individual assessment)	The script of the story was needs to be presented by the group.	The script of the story was poorly presented by the group.	The script of the story was moderately presented by the group.	The script of the story was fairly well presented by the group.	The script of the story was very well presented by the group.
Task 2.2 Visuals of Story (Group + Individual assessment)	The visuals of the story need to be shot.	The visuals of the story poorly shot.	The visuals of the story were moderately shot.	The visuals of the story were fairly well shot.	The visuals of the story were shot very well.
Task 2.2 Editing of the Story (Group + Individual assessment)	The editing of the story needs to be done.	The editing of the story just about done.	The editing of the story was moderately done.	The editing of the story was fairly well done.	The editing of the story was very well done.

Assessment Matrix:

Module 3.0: Fundamentals of Information Design

Parameters / Achievement Levels	**1-2 BEGINNING**	**3-4 DEVELOPING**	**5-6 PROMISING**	**7-8 PROFICIENT**	**9-10 EXCELLENT**
Task 3.1 Visualisation of the Journey from Home to School (Individual assessment)	The visualization of the journey from home to school needs to begin with both the quantitative and qualitative elements being represented	The visualization of the journey from home to school was just about done with both the quantitative and qualitative elements somewhat represented	The visualization of the journey from home to school was done moderately well with both the quantitative and qualitative elements moderately represented	The visualization of the journey from home to school was fairly done well with both the quantitative and qualitative elements represented fairly	The visualization of the journey from home to school was done well with both the quantitative and qualitative elements represented well
Task 3.2 Charts about the Statistics of the School (Group + Individual assessment)	Design of the charts about the Statistics of the School needs to be done.	Design of the charts about the Statistics of the School was just about done.	Design of the charts about the Statistics of the School was moderately done.	Design of the charts about the Statistics of the School was fairly done.	Design of the charts about the Statistics of the School was very well done.
Task 3.3 Directional Signage for School (Group + Individual assessment)	Design of the directional signage for the School needs to be done.	Design of the directional signage for the School was just about done.	Design of the directional signage for the School was moderately done.	Design of the directional signage for the School was fairly done.	Design of the directional signage for the School was very well done.

Assessment Criteria:

Module 4.0: Communication Design Collaborative Project

Achievement Levels	**1-2** **BEGINNING**	**3-4** **DEVELOPING**	**5-6** **PROMISING**	**7-8** **PROFICIENT**	**9-10** **EXCELLENT**
Task 4.1 Problem/Issue Identification (Group Assessment)	Needs help to identify the key elements of the problem and/or the objectives with a great deal of assistance	Just about identifies the key elements of a problem and vaguely outlines the objectives with assistance	Moderately identifies the key elements of problems and outlines the objectives with assistance	Fairly identifies the key elements of problems and clearly outlines the objectives in an effective manner with little assistance	Identifies the key issues and has a very good understanding of the problem area based on secondary and primary research
Task 4.2 Analysis of Problem (Group + Individual assessment)	Needs a great deal of assistance to interact with communication design and note down observations	Needs some assistance to interact with communication design and note down observations	Moderately develops strategies to interact and use logical reasoning to observe and note down observations with assistance	Fairly develops strategies to interact with communication design and use logical reasoning to reach accurate results with little assistance	Analysis of the communication problem was done very well with proper categorisation and assigning priorities.
Task 4.3 Ideation and Shortlisting (Group + Individual assessment)	Needs to come out with creative innovative alternate ideas along with sketches	Just about comes out with creative innovative alternate ideas along with sketches	Moderately comes out with creative innovative alternate ideas along with sketches	Fairly comes out with creative innovative several alternate ideas along with sketches	Comes out with creative innovative several alternate ideas along with sketches
Task 4.4 Mock-up Prototype (Group + Individual assessment)	The mock-up of the prototype of the final concept + feedback needs to be done	The mock-up of the prototype of the final concept + Feedback was just about done	The mock-up of the prototype of the final concept + Feedback was moderately done	The mock-up of the prototype of the final concept + Feedback was fairly done	The mock-up of the prototype of the final concept was done well +incorporating feedback from the users
Task 4.5 Final Design Presentation (Group + Individual assessment)	The final presentation showing the design process and the final solution needs to be done	The final presentation showing the design process and the final solution was just about done	The final presentation showing the design process and the final solution was moderately done	The final presentation showing the design process and the final solution was fairly done	The final presentation showing the design process and the final solution was done very well

Assessment Matrix:

Module 5.0: Fundamentals of Product Design

Achievement Levels	1-2 BEGINNING	3-4 DEVELOPING	5-6 PROMISING	7-8 PROFICIENT	9-10 EXCELLENT
Task 5.1b: Understanding Form (Individual assessment)					
Understanding and Application	Drawing of extremes is not clearly represented Not consistent between different shapes (abrupt)	Drawing of extremes is somewhat clearly represented Somewhat consistent between different shapes	Drawing of extremes is clearly represented Moderately consistent between different shapes	Drawing of extremes is very clearly represented Very consistent between different shapes	Drawing of extremes is extremely clearly represented Extremely consistent between different shapes
Involvement / participation	No interaction during the task	Low level of interactions during the task	Moderate level of interactions during the task	Good level of interactions during the task	High level of interactions during the task
Skill demonstration	Is able to present the model with **many** imperfections **(9 to 10 imperfections)**	Is able to present the model with **moderate** (imperfections **(7 to 8 imperfections)**	Is able to present the model with **few** imperfections **(5 to 6 imperfections)**	Is able to present the model with **very few** imperfections **(3 to 4 imperfections)**	Is able to present the model which is close to perfection **(1 to 2 imperfections)**
Task 5.2: Representation and Analysis of Form (Individual assessment)					
Product analysis	No factors of product analysis covered	**Very few** (one) factors of product analysis are covered with **insufficient/improper** depth	**Few (two)** factors of product analysis are covered with **moderate** depth	**Most** (three) factors of product analysis are covered with **significant** depth	**All** (four)factors of product analysis are covered with proper/adequate depth
Involvement / participation	No interaction during the task	Low level of interactions during the task	Moderate level of interactions during the task	Good level of interactions during the task	High level of interactions during the task

Skill demonstration	Is able to sketch with **no** details	Is able to sketch with **few** details	Is able to sketch with **moderate** details	Is able to sketch with **many** details	Is able to sketch with **perfection**.
Documentation/presentation	No stages covered	1-2 stages of documentation with no detailing	1-2 stages of documentation with inadequate detailing	3 stages of documentation with inadequate detailing	3 stages of documentation with adequate detailing
Task 5.3: Nature and Design (Individual assessment)					
Critical thinking	With **no** correlation	With **slight** correlation	With **moderate** correlation	With **adequate** correlation	With **perfect** correlation
Concept/Form development	1 concept developed	2 concepts developed	3 concepts developed	4 concepts developed	5 concepts developed
Involvement / participation	No interaction during the task	Low level of interactions during the task	Moderate level of interactions during the task	Good level of interactions during the task	High level of interactions during the task
Skill demonstration	Is able to sketch with no details	Is able to sketch with few details	Is able to sketch with moderate details	Is able to sketch with many details	Is able to sketch with perfection.
Task 5.4: Simple Product Design (Group assessment)					
Problem Analysis	Is able to identify a problem (only)	Is able to identify a problem and develop a simple design brief	Is able to identify a problem and develop a simple design brief which has few relevant parameters of the problem	Is able to identify an appropriate problem and develop a design brief which has some relevant parameters of the problem	Is able to identify an appropriate problem and develop a detailed design brief which has all the relevant parameters of the problem
Concept Development	The problem is not addressed	The problem is somewhat addressed	The problem is moderately addressed	The problem is completely addressed and **not** acknowledged by the 'client student'	The problem is completely addressed and is acknowledged by the 'client student'
Involvement / participation	No interaction during the task	Low level of interactions during the task	Moderate level of interactions during the task	Good level of interactions during the task	High level of interactions during the task
Skill demonstration	Is able to sketch with no details	Is able to sketch with few details	Is able to sketch with moderate details	Is able to sketch with many details	Is able to sketch with perfection.

Assessment Matrix:

Module 6.0: Fundamentals of Interface Design

Achievement Levels	**1-2 BEGINNING**	**3-4 DEVELOPING**	**5-6 PROMISING**	**7-8 PROFICIENT**	**9-10 EXCELLENT**
Task 6.1: Understanding user Interface (Individual assessment)					
Concept Development	**No** element of exploration	The exploration is **somewhat** addressed	The exploration is **moderately** addressed	The exploration is **adequately** addressed	The exploration is **completely** addressed
Involvement / Participation	No interaction during the task	Low level of interactions during the task	Moderate level of interactions during the task	Good level of interactions during the task	High level of interactions during the task
Task 6.2: User Research (Individual assessment)					
Research Analysis	Data gathered with **no** analysis	Data gathered with **little** analysis	Data gathered with **moderate** analysis	Data gathered with **adequate** analysis	Data gathered with **detailed** analysis
Interface Analysis	**No** analysis	**Little** analysis	**Moderate** analysis	**Adequate** analysis	**Detailed** analysis
Task 6.3: Product Interface Design (Group assessment)					
Concept Design	Problem is **not** addressed through the interface redesign	Problem is **somewhat** addressed through the interface redesign	Problem is **moderately** addressed through the interface redesign	Problem is **adequately** addressed through the interface redesign	Problem is **completely** addressed through the interface redesign
Involvement / Participation	No interaction during the task	Low level of interactions during the task	Moderate level of interactions during the task	Good level of interactions during the task	High level of interactions during the task
Final Presentation	One stage	Two stages	Three stages	Four stages	All five stages

Task 6.4: Understanding Graphical User Interface (Individual assessment)					
Concept Development	**No** element of exploration	The exploration is **somewhat** addressed	The exploration is **moderately** addressed	The exploration is **adequately** addressed	The exploration is **completely** addressed
Involvement / Participation	No interaction during the task	Low level of interactions during the task	Moderate level of interactions during the task	Good level of interactions during the task	High level of interactions during the task
Task 6.5: Developing an Interface in the Digital Space (Group assessment)					
Concept Design	**Absence** of detailing	**Low** level of detailing	**Moderate** level of detailing	**Adequate** level of detailing	**High** level of detailing
GUI Design	**No** rationale for the design elements	Rationale for **one** design element is provided	Rationale for **two** design elements is provided	Rationale for **three** design elements is provided	Rationale for **four** design elements is provided
Involvement / Participation	No interaction during the task	Low level of interactions during the task	Moderate level of interactions during the task	Good level of interactions during the task	High level of interactions during the task

Assessment Matrix:

Module 7.0: Fundamentals of Game and Toy Design

Achievement Levels	1-2 BEGINNING	3-4 DEVELOPING	5-6 PROMISING	7-8 PROFICIENT	9-10 EXCELLENT
Task 7.1: Deconstructing Game (Individual assessment)					
Game analysis (depicted through presentation)	No factors of game analysis are covered	**Very few** (one) factors of game analysis are covered with **insufficient/improper** depth	**Few (two)** factors of game analysis are covered with **moderate** depth	**Most** (three) factors of game analysis are covered with **significant** depth	**All** (four)factors of game analysis are covered with proper/adequate depth
Involvement / participation	No interaction during the task	Low level of interactions during the task	Moderate level of interactions during the task	Good level of interactions during the task	High level of interactions during the task
Task 7.2: Design of an Innovative Game (Group + Individual assessment)					
'Learning' objective	Learning objective is not met	Learning objective is met to some extent	Learning objective is met to a moderate extent	Learning objective is met to fair extent	Learning objective is completely met
Game design and presentation (prototype)	No element of game is incorporated	One element of game are incorporated	Two elements of game are incorporated	Three elements of game are incorporated	All four elements of game are incorporated
Task 7.3: Design of an Innovative Toy (Group + Individual assessment)					
Application	The concept of physics is not applied	The concept of physics somewhat applied	The concept of physics moderately applied	The concept of physics is sufficiently applied	The concept of physics completely applied
Model making	The model doesn't work	The model works but with many errors	The model works but with few errors	The model works but with few negligible errors	The model works with perfection

Assessment Matrix:

Module 8.0: Design Project: Product Design Collaborative Enterprise Start-up Project

Achievement Levels	**1-2 BEGINNING**	**3-4 DEVELOPING**	**5-6 PROMISING**	**7-8 PROFICIENT**	**9-10 EXCELLENT**
Task 8.1 Identify a Problem (Group + Individual assessment)	Is not able to **identify** a problem	Is able to identify a problem and develop a simple design brief	is able to identify a problem and develop a simple design brief which has few relevant parameters of the problem	Is able to i**dentify** an **appropriate** problem and develop a design brief which has **some** relevant parameters of the problem	Is able to i**dentify** an **appropriate** problem and develop a **detailed** design brief which has **all** the relevant parameters of the problem
Task 8.2 Analysis of Design Opportunity (Group + Individual assessment)	Is not able to develop a **simple** design brief	able to develop a design specification which **specifies** the requirement only and there is **no** reference to the outcome of the research	able to develop a design specification which **outlines** the requirement with **no** reference to the outcome of the research	Is able to develop a design specification which **outlines** the requirement with **limited** reference to the outcome of the research	Is able to develop a design specification which **justifies** the requirement based on the outcome of the research
Task 8.3 Creative Alternatives (Group + Individual assessment)	Is able to showcase development of **few** ideas with the help of concept models with **no** analysis of the outcome	Is able to showcase development of ideas with the help of concept models with **no** analysis of the outcome	Is able to showcase development of ideas with the help of concept models with no analysis of the outcome Is able to select one idea for detailed development (as a solution to the problem) with no justification	Is able to showcase development of ideas with the help of concept models with limited analysis of the outcome Is able to select one idea for detailed development (as a solution to the problem) with little justification	Is able to showcase development of ideas with the help of concept models with detailed analysis of the outcome Is able to select one idea for detailed development (as a solution to the problem) with sufficient justification
Task 8.4 Prototype and	The mock-up of the prototype of the final concept	The mock-up of the prototype of the final concept	The mock-up of the prototype of the final concept	The mock-up of the prototype of the final	The mock-up of the prototype of the final concept

Feedback (Group + Individual assessment)	yet to be done	was done poorly + without incorporating feedback from the users	was done moderatley well +incorporating feedback from the users	concept was done fairly well +incorporating feedback from the users	was done very well +incorporating feedback from the users
Task 8.5 Business Model (Group assessment)	The students are yet to put together a viable business model for their design enterprise	The students put together a poorly done viable business model for their design enterprise	The students put together a moderately viable business model for their design enterprise	The students put together a fairly viable business model for their design enterprise	The students put together a good viable business model for their design enterprise
Task 8.4 Final Pitch Presentation (Group + Individual assessment)	The final presentation showing the business model, design process and the final solution is yet to be done	The final presentation showing the business model, design process and the final solution was poorly done	The final presentation showing the business model, design process and the final solution was moderately done	The final presentation showing the business model, design process and the final solution was fairly done well	The final presentation showing the business model, design process and the final solution was done very well

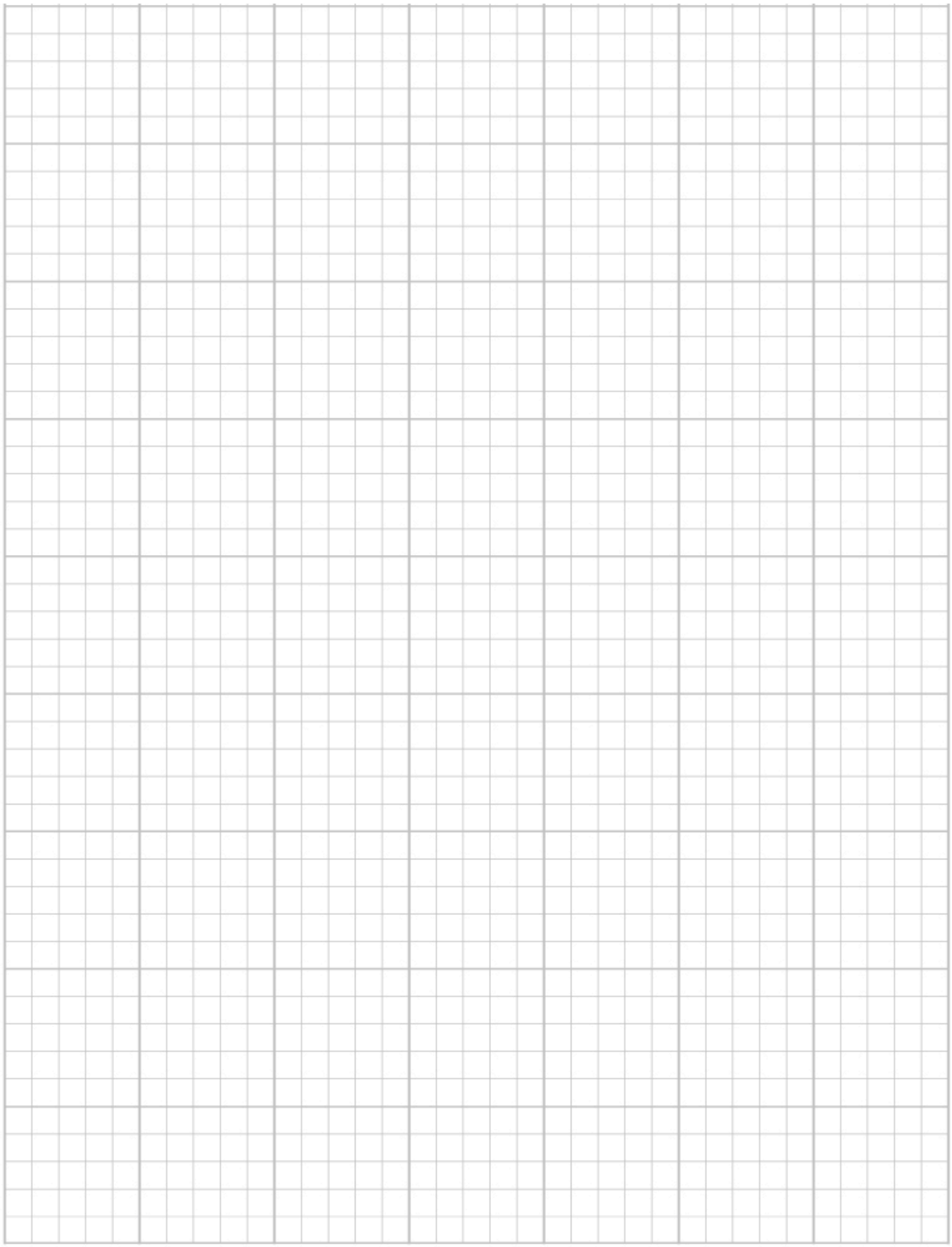
Student Feedback Form:

NAME	CLASS	MODULE	TASK	ACTIVITY	DATE
Give a rating for each of the statements below: - by placing a tick mark in the corresponding box.					
	INADEQUATE	**FAIR**	**GOOD**	**VERY GOOD**	**EXCEPTIONAL**
Level of effort you put into activity					
Your level of knowledge at the start of the activity					
Your level of knowledge at the end of the activity					
Understanding of exposure slides/video					
	STRONGLY DISAGREE	**DISAGREE**	**NEUTRAL**	**AGREE**	**STRONGLY AGREE**
I enjoyed doing the activity					
I understood the design principles while doing the task					
I liked trying out different creative variations					
I can apply design thinking process to problem solving					
I enjoyed working in collaboration with my group					
Additional Comments:					
What I liked the most: What can be done better:					
What can be Added/Changed:					

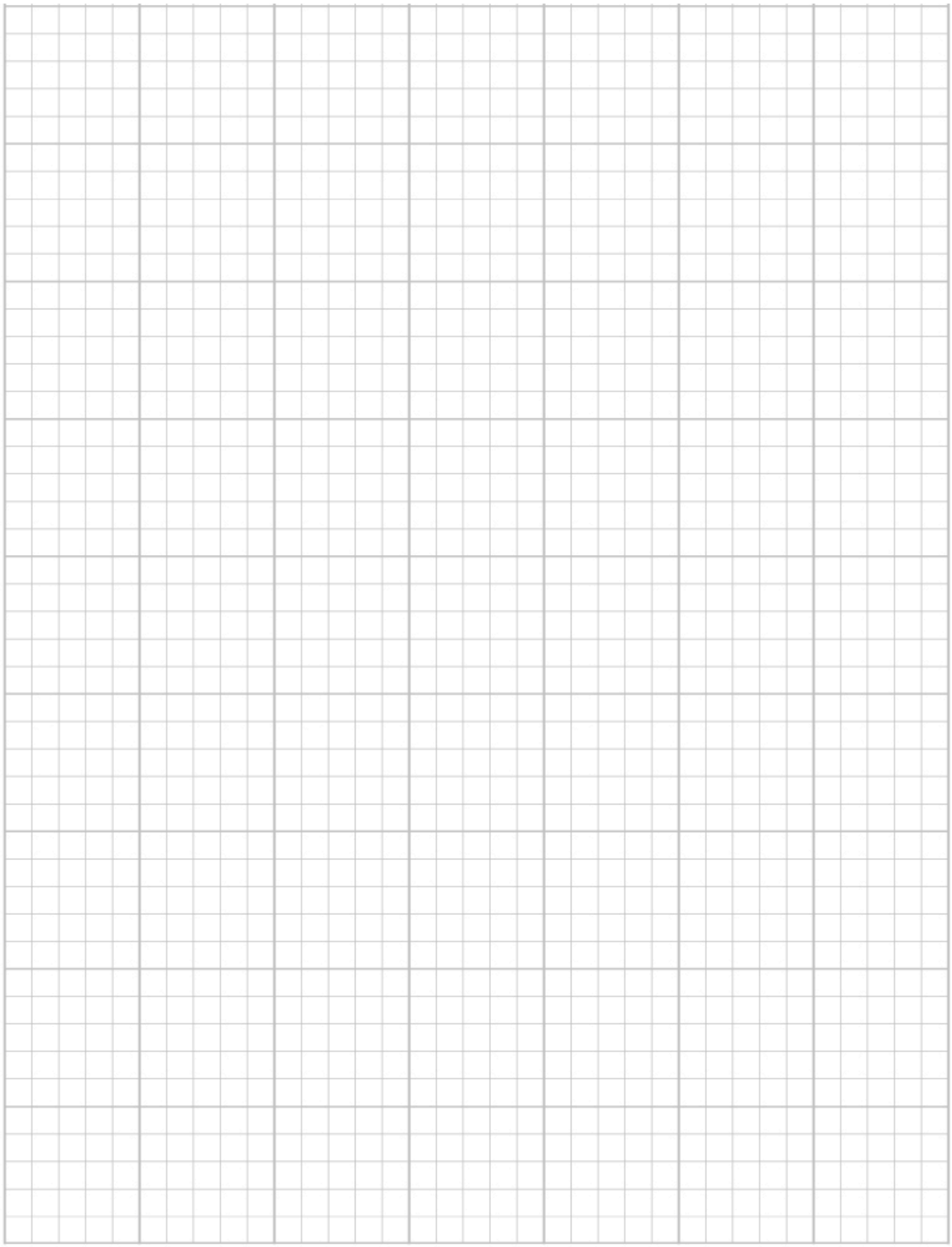
Teacher Feedback Form:

NAME	CLASS	MODULE	TASK	ACTIVITY	DATE
Comments: - place a tick mark in the corresponding box.					
	COMMENTS				
It was easy to deliver the exposure modules:	**STRONGLY DISAGREE**	**DISAGREE**	**NEUTRAL**	**AGREE**	**STRONGLY AGREE**
Your comments:					
It was easy/satisfying/enjoyable to conduct the task activities:	**STRONGLY DISAGREE**	**DISAGREE**	**NEUTRAL**	**AGREE**	**STRONGLY AGREE**
Your comments:					
No issues were faced with regard to assessment of the task:	**STRONGLY DISAGREE**	**DISAGREE**	**NEUTRAL**	**AGREE**	**STRONGLY AGREE**
Your comments					
Common questions posed by the students:					
Suggestions for improving the task or suggestion of another task:					
Other suggestions, if any:					

Grid layout for sketches and taking notes:



Grid layout for sketches and taking notes:



Credits

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Design Thinking and Innovation

for Grade 11, Semester 1 and 2

Taskbook

2022

Hope you enjoyed the Tasks

CBSE, New Delhi