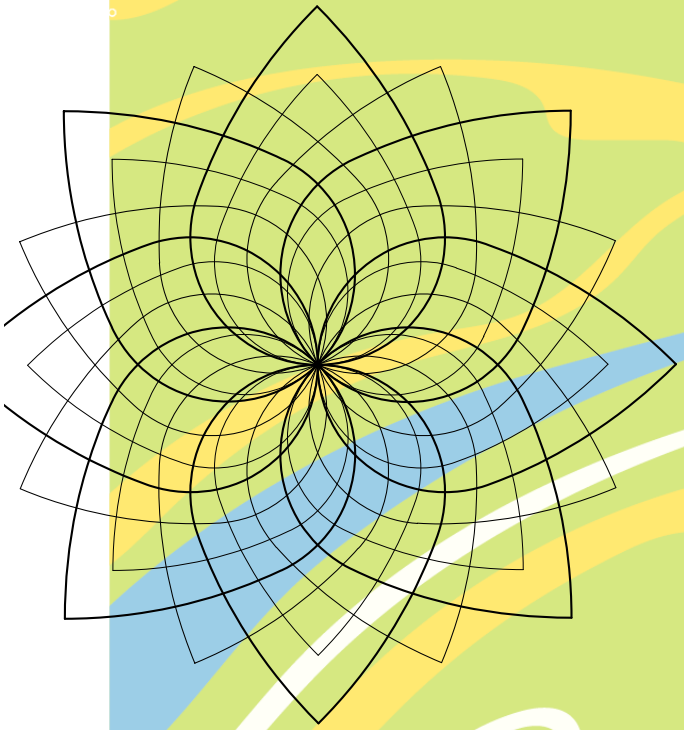
Design Thinking and Innovation

for Grade 9, Semester 1 & 2

Taskbook

2022



Task-book

CBSE, New Delhi

Design Thinking and Innovation Curriculum for Grade 9

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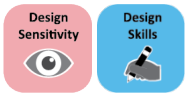
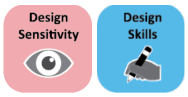
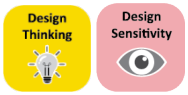
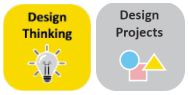
1.0		Fundamentals of Documentary Photography	18 hours	18 credits	7
2.0		Fundamentals of 2D	18 hours	18 credits	12
3.0		Introduction to Observation + Problem Identification	18 hours	18 credits	24
4.0		Design Project 1 with focus on Communications and emphasis on Problem Identification	27 hours	27 credits	30
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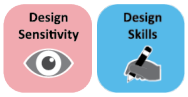
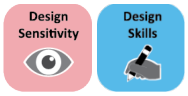
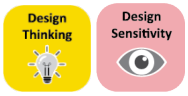
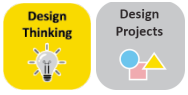
5.0		Fundamentals of Sketching for Ideation	18 hours	18 Credits	37
6.0		Fundamentals of 3D	18 hours	18 Credits	44
7.0		Introduction to Problem Understanding + Analysis	18 hours	18 credits	51
8.0		Design Project 2 with focus on Products and emphasis on Problem Analysis and Mappings	27 hours	27 credits	57
9.0		Assessment + Feedback Forms			63
		Total Hours and Credits	162 hours	162 credits	

Design Thinking and Innovation Task-book for Grade 9

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,

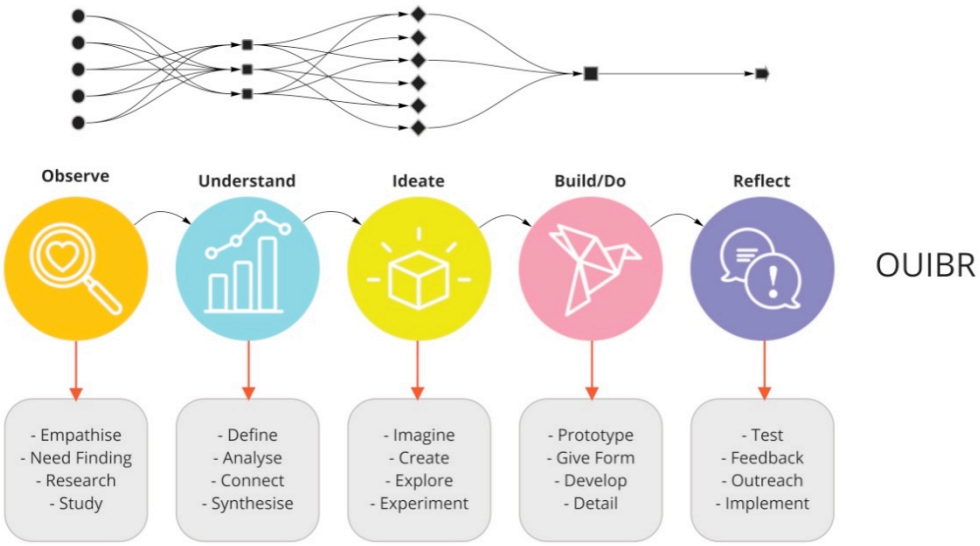
- The third phase helps you to come out with several alternate creative innovative solutions to the problem

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.



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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.

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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:

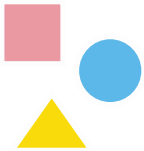
• Explore student's **sensory** abilities, **cognitive** abilities and **social** abilities

• 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.

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References:

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

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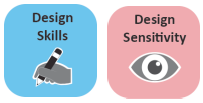
Design Thinking and Innovation Task-book for Grade 9

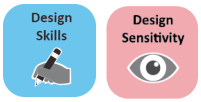
Overview:

0.2
Modules for grade 9

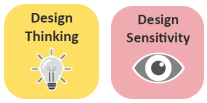
Semester 1



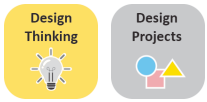
Documentary Photography



Fundamentals of 2D

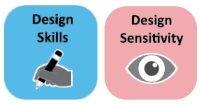


Problem Identification/ Empathy

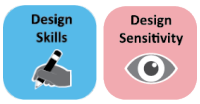


Design Project 1 with focus on Communication

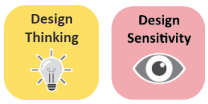
Semester 2



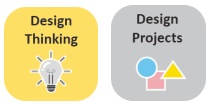
Sketching for Ideation



Fundamentals of 3D



Problem Analysis + Mappings



Design Project 2 with focus on Products

0.3
Overall Vision for Grade 9

- Learn/practice of Design Skills
- Learn Fundamentals of Design
- Focus on Design Concerns and Building Empathy
- Understanding of Problem Space
- Building Empathy with Analysis
- Application of Design Process and Methods

0.4
Overall Learning Objectives

- Fundamentals of Documentation through Photography
- Fundamentals of 2D and 3D
- Fundamentals of Sketching for Ideation
- Introduction to Problem Identification, Analysis and Visualisation
- Application of Design Thinking Process to simple Problem Solving

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0.5
Additional Competencies

- Enhance Observation and Analytical Skills
- Develop Concerns for Design Issues
- Improve Communication and Presentation skills

0.6
Matching SDG Goals

Design Thinking and Innovation Task-book for Grade 9

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.