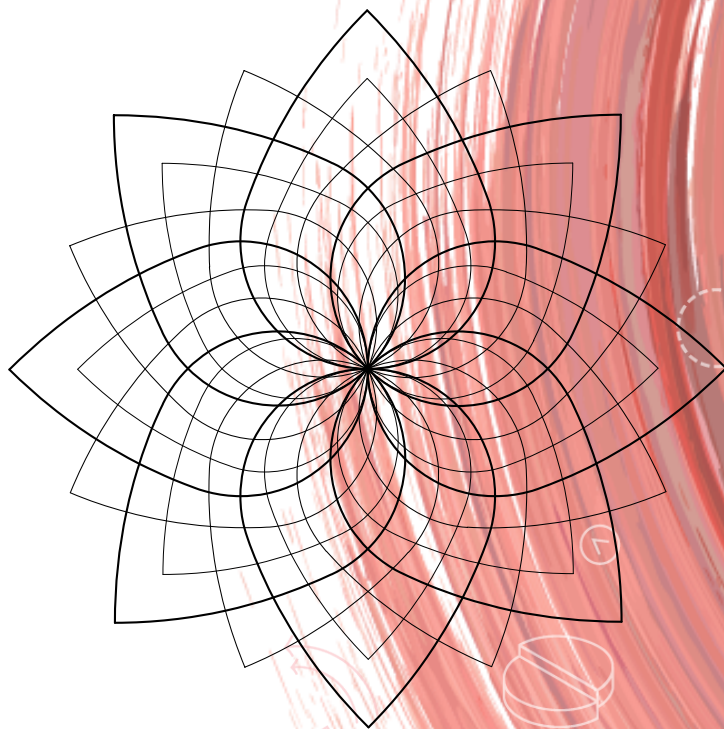


# **Design Thinking and Innovation**

for Grade 12, Semester 1 and 2

**Taskbook**

2022



**Task-book**

CBSE, New Delhi

# Design Thinking and Innovation Curriculum Grade 12

## Contents:

| Module Contents | No.  | Type                                                                                                                                                                    | Module Title                                                             | Time      | Grade       | Page |
|-----------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------|-------------|------|
|                 | 0.0  |                                                                                                                                                                         | Introduction and Overview                                                |           |             | 2    |
|                 | 1.0  |       | Introduction to Indian Knowledge Systems                                 | 20 hours  | 20 credits  | 7    |
|                 | 2.0  |       | Design for Personal Space                                                | 20 hours  | 20 credits  | 17   |
|                 | 3.0  |     | Design for Social Space                                                  | 20 hours  | 20 credits  | 26   |
|                 | 4.0  |   | Design for Public Space                                                  | 20 hours  | 20 credits  | 35   |
|                 | 5.0  |   | Capstone Final Design Project Stage 1 – Observations and Analysis        | 20 hours  | 20 Credits  | 48   |
|                 | 6.0  |   | Capstone Final Design Project Stage 2 – Ideation and Alternate Solutions | 20 hours  | 20 Credits  | 51   |
|                 | 7.0  |   | Capstone Final Design Project Stage 3 – Prototyping and Feedback         | 20 hours  | 20 credits  | 53   |
|                 | 8.0  |   | Capstone Final Design Project Stage 4 – Presentation and Documentation   | 20 hours  | 20 credits  | 55   |
|                 | 9.0  |                                                                                                                                                                         | Assessment + Feedback Forms                                              |           |             | 60   |
|                 | 10.0 |                                                                                                                                                                         | Acknowledgements + Credits                                               |           |             | 71   |
|                 |      |                                                                                                                                                                         | Total Hours and Credits                                                  | 160 hours | 160 credits |      |

# Design Thinking and Innovation Task-book for Grade 12

## 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)

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.

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,

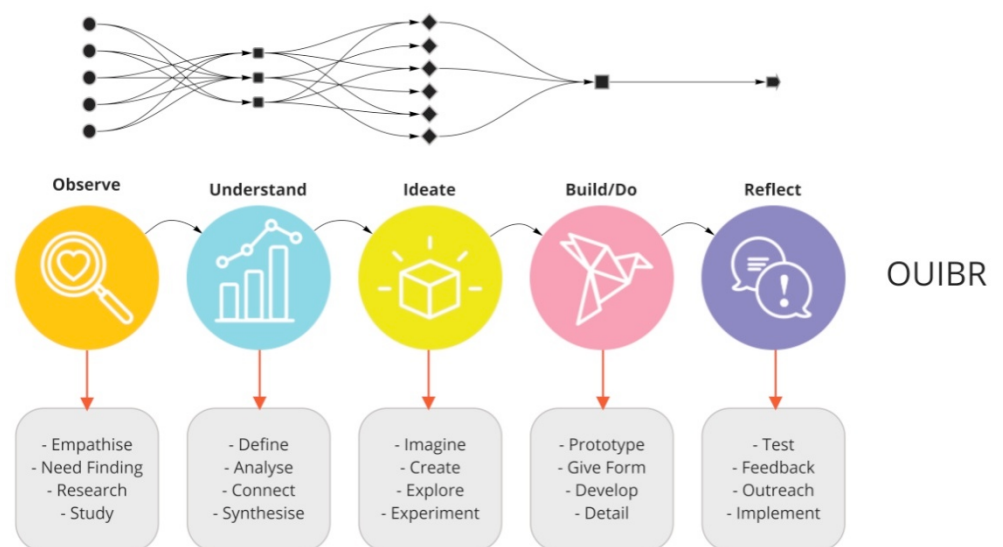
- The third phase helps you to come out with several alternate creative innovative solutions to the problem

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.



### 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.

### 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**



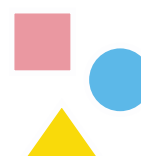
- Nurture their **curiosity** and enhance their **explorative** abilities



- 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 12

## Overview:

0.2

### Modules for Grade 12

#### Semester 1



Introduction to Indian Knowledge Systems



Design for Personal Space



Design for Social Space



Design for Public Space



#### Semester 2



Capstone Final Design Project Stage 1



Capstone Final Design Project Stage 2



Capstone Final Design Project Stage 3



Capstone Final Design Project Stage 4



0.3

### Overall Vision for Grade 12

- Understanding of Indian Knowledge Systems
- Create sensitivity towards Design
- Apply of Design Thinking Process in a range of projects
- Ability to solve problems collaboratively together

0.4

### Overall Learning Objectives

- Design for Personal Spaces, Social Spaces and Public Spaces
- Application of Indian Knowledge Systems to solving problems
- Application of Design Thinking Process through Collaborative Projects
- Application of Design Principles and Thinking Process through a semester long Capstone Project

0.5

### Additional Competencies

- Enhance Observation and Analytical Skills
- Develop Concerns for Design Issues
- Become more confident in solving a range of problems

0.6

### Matching SDG Goals



# Design Thinking and Innovation Task-book for Grade 12

## 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<br>FF-EF-EE<br>0.0-0.1-0.2 | Developing<br>DE-DD<br>0.3-0.4 | Promising<br>CD-CC<br>0.5-0.6 | Proficient<br>BC-BB<br>0.7-0.8 | Excellent<br>AB-AA<br>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.