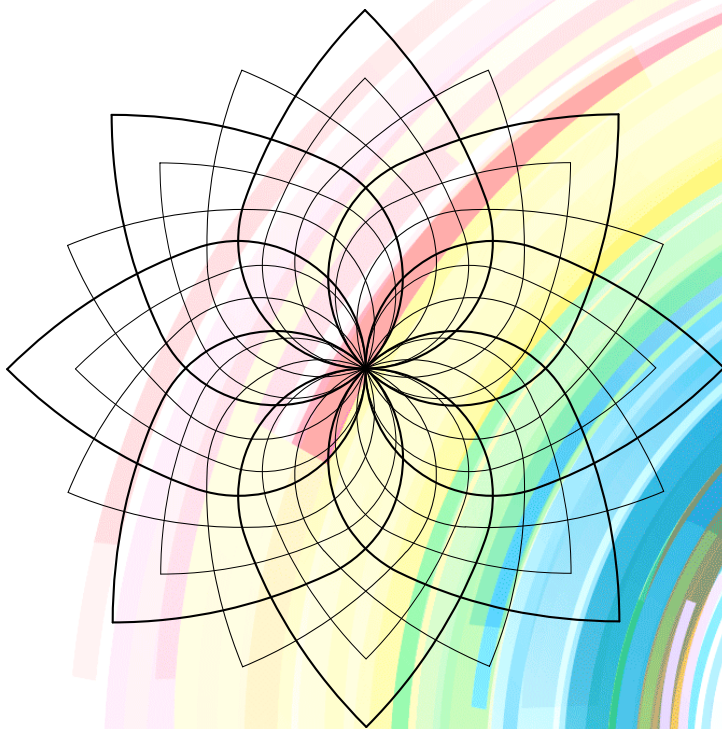


Design Thinking and Innovation

for Grade 6 to 12

FAQs and Introduction

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CBSE, New Delhi

FAQs & Introduction

FAQs and Introduction to Design Thinking and Innovation Curriculum in Schools

2022

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1.0

Introduction to Design Thinking and Innovation in Schools:

1.1

What is Design?

To understand what is design, let's look at quotes by designers:



"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 as best to accomplish a particular purpose"

- 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, considering aspects of sustainability such that it makes a positive difference to life in our universe.

1.2

Who is a Designer?

A designer is a highly creative person who enjoys solving problems. A designer also needs to be a sensitive human being empathetic to issues and problems.

As a designer, you will learn to identify problems, think of a creative solution to solve it and show and demonstrate how this can be done such that it adds value to peoples' lives. (Ref: 2)

Design is part of the creative industry and 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 the creative streak in you an outlet and also provide you with innovative problem-solving skills, design may be the option for you.

1.3

What is Design Thinking?

One can understand Design Thinking as a method to solve problems using a process.

A process that first understands the user's needs, identifies and analyses a problem, and research relevant information, after which ideas are explored and analyzed, until an appropriate innovative solution to the problem or need is arrived at.

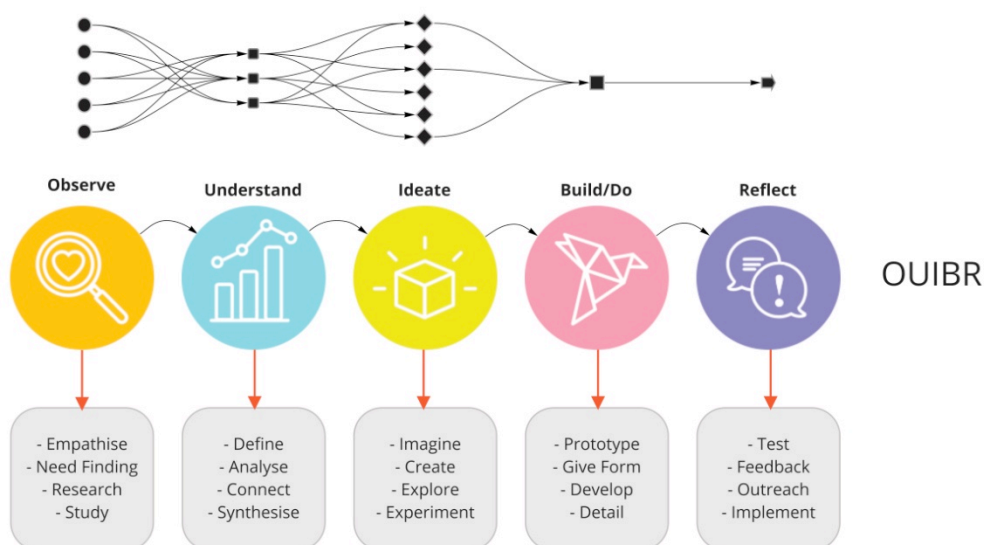
Hence Design Thinking could be viewed as the process that translates an idea into a blueprint for something useful, whether it's a vehicle, a building, a graphic, a service, or a system. (Ref: 2)

1.4

What is the Design Thinking Process?

It involves the following five phases in the process of solving a problem:

1. Observe/Empathize/Research,
 - the first phase helps you to identify needs and locate issues to be solved through observation and empathy
2. Understand/Analyse/Define,
 - this phase of the process helps you to understand, define and analyse the problem area
3. Ideate/Alternate/Create,
 - this phase helps you to come out with several alternate creative innovative solutions to the problem
4. Build/Prototype/Detail and
 - this phase helps you to actualize the solution by building mock-ups, creating scenarios and then prototyping and detailing
5. Evaluate/Reflect/Implement
 - the last phase is to get feedback through evaluation so that the suggestions can be implemented in the final solution.



1.5

Who is a Design Thinker?

A Designer Thinker is a person who applies the Design Thinking process to solve problems and find a creative innovative solution 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 neighbourhoods or in your place of work. 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.

1.6

What is Design Innovation?

Innovation involves the implementation of something new and replacing or reframing of the existing mindset. It is about translating a concept, idea, thought or invention into artefacts and services that create value to 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.

1.6

Why should a student opt for this curriculum?

Design Thinking and Innovation will assume an ever more important role to play in the future of our world. This will help address, identify and solve problems creatively whatever the field of specialization. It should be useful to find solutions to issues both within one's own neighborhoods and to issues at a national or global level. It will also be a useful tool for us to move towards a creative economy in the coming years.

So if you would like to be part of this creative innovative practice, do opt for this subject.

1.7

What areas or specializations of design can one pursue?

Design today is everywhere. It's driving businesses, cultures, media and technology and making sure environments (virtual or real) are easier to navigate. Design is integral to the creative industries and is part of the economy driven through creativity and innovation. We could categorize the following as broad fields of design that imbibe various specializations within themselves. These are some of the options for you to pursue as part of your future studies or as a carrier option:

- Communication design (Animation, Publication Design, Web Design, Graphics Design, Printing, Film and Video)
- Spatial design (Architecture and Interior Design, Environmental Design, Exhibition Design, Set Design, Signage Design)
- Industrial Design (Transportation, Furniture, Ceramics, Products and Packaging)
- Textiles Design (Fashion, Accessories, Jewelry)
- Craft Design (Material-based, Technology-based)
- Digital design (User experience design, User Interface design, New Media Design, Game Design, AR/VR/MR, Information Visualization)
- Service Design (Social Services, Health and Wellness Services, Agriculture Services, Public Services)
- Design management (Design Policy, Design Strategy, Design Planning, Transformation Design)

2.0

Aims and Objectives of Design Thinking and Innovation Curriculum:

2.1

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

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

- Students should be able to explore their sensory abilities, cognitive abilities, and social abilities
 - It should create awareness in the students through observation, discovery, analysis, experience, collaboration, and reflection
 - It should nurture their curiosity and enhance their explorative abilities
 - It should foster creativity and innovation in students
 - The students should be able to identify problems and be able to find solutions
 - They should be able to apply design thinking processes and methods to solve various problems
 - They should be able to learn the fundamentals/essentials of the creative design discipline
 - The focus is more on hands-on knowledge learned by doing, exploring and acting upon challenges discovered within their surroundings
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- 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 will also help students derive a culturally-rooted understanding of design from information documented under the Indian Knowledge Systems.

2.2

What are the learning objectives and competencies of the Design Thinking and innovation Curriculum?

The students should be able to do the following after taking the DT&I modules:

- The students will enhance their observation skills and build empathy for issues and problems concerning users and our environment
- The students will improve their communication skills to be able to make presentations and defend their ideas and thinking with confidence
- This curriculum will bring in sensitivity to various aspects of design
- The students will be able to identify potential problems and be able to understand and analyse them
- The students will learn to explore creative innovative alternatives as possible solutions
- The students will learn how to create solution scenarios, make mock-ups and build prototypes

2.3

How does the focus of the curriculum change from grade 6 to grade 12?

The focus of the curriculum for the different grades are as follows:

- Grade 6/7/8:

- **Focus on exposure and discovery**

During Grade 6/7/8 the students get an initial short exposure to Design Skills, Design Sensitivity and Design Thinking Process with the main aim of creating an interest in this field.

- Grade 9:

- **Focus on concerns, skills and sensitivity**

During Grade 9, it involves learning Design Skills, Building Empathy with Analysis and application of Design Thinking Process to simple Problem Solving.

- Grade 10:

- **Focus on creativity and problem solving**

Grade 10 involves further learning of Design Skills, discovery through Creative Explorations, Prototyping, and application of the Design Thinking Process to Contextual Problems.

- Grade 11:

- **Focus on design options and solving problems together**

Grade 11 will introduce students to different fields/branches of the Design and Design Thinking Process involving projects solving Wicked Problems. They learn to work collaboratively and discover how to start a Design Enterprise.

- Grade 12:

- **Focus on application and execution**

In Grade 12, the students will be able to apply Design Problem Solving to different Environments followed by a Semester-long Design Thinking Process Capstone Project where they will get a chance to implement all that they have learned during the Design Thinking and innovation curriculum.

2.4

Which student can opt for Design Thinking and Innovation curriculum?

Design Thinking and innovation is open to all students who would like to learn about this field.

It is being introduced as part of the skill subject as per the mandates of the National Education Policy 2020.

The curriculum can also be adapted to the needs of children with disability.

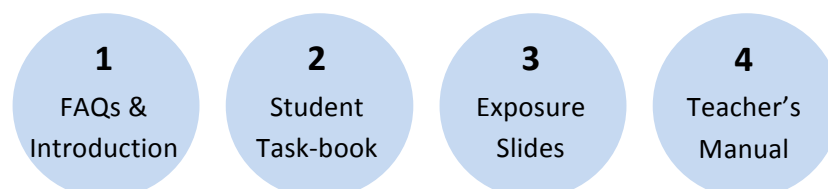
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Implementing Design Thinking and Innovation in Schools:

3.1

How is the content for Design Thinking and Innovation made available?

The content for the Design Thinking and Innovation curriculum is made available through these four documents which will be available online.



1. FAQs and Introduction

This document will provide an introduction to Design Thinking and innovation as well as answer all the frequently asked questions regarding this new subject in the school curriculum

2. Workbook

This will comprise of an introduction to the subject, its vision, learning objectives and competencies, the tasks to be done, grading criteria, assessment matrix, Feedback forms and references

3 Exposure Slides/Video

Each of the modules will be supported by exposure slides or videos that can be accessed by both the teacher and the students.

4. Teacher's Manual

This will have more details on teaching methods, aims and objectives, task sequence flow, task details, assessment matrix for grading and evaluation forms for feedback.

3.2

How will Design Thinking and Innovation be implemented in Schools?

DT&I will be implemented from Grade 6 till Grade 12. In Grades 6, 7, 8 the students will get an initial exposure to DT&I for a duration of 18-20 hours such that it can create an interest in this field, nurture their sense of curiosity, motivate them to explore, experiment and take it up as a subject to pursue from Grade 9 onwards.

From Grade 9 till Grade 12, DT&I will be introduced as a regular subject comprising of various related modules with duration of 160 hours for each grade. The recommended duration of contact hours is 2:1 between school hours and home hours.

All CBSE schools are eligible to introduce DT&I as part of their curriculum.

3.3

How is Design Thinking and Innovation taught and assessed in schools?

DT&I learning involves playful joyful immersive experiences. The students learn through experiential, exploratory, do-it-and-learn methods. They learn by solving contextual problems. They will explore and experiment with creative options. The students will work together, collaborate and cooperate while finding solutions. The classrooms will become studios where they can explore different materials and processes. The teacher will

be like a mentor who supports the students in the learning and doing process.

It is recommended that 3 periods of 40 minutes each be combined together into a 2-hour duration for the DT&I classes such that it gives sufficient time to solve the given task.

The learning happens through exposure to the subject, solving problems/tasks defined in the workbook, discussions and presentations. The assessment is through continuously assessing the performance of work/tasks carried out by the students throughout the academic year. The criteria for assessment are defined in the workbook for each of the tasks.

3.4

What infrastructure do schools need for conducting Design Thinking and innovation classes?

The curriculum has been structured such that DT&I can be taught in schools in normal classrooms. Provision should be made for students to work together in groups of 2 to 4. Arrangements should be made to put up the student's work on the walls of the classrooms to facilitate discussions as well as for the presentation of the work.

Computer facility and access to the internet will be helpful but is not a must. For schools without access to the internet, the Workbooks, Teacher's Manual, and the Exposure Content can be made available physically through printouts.

The Design Thinking and Innovation curriculum is easy to understand and deliver for teachers. And, it can be taught in remote locations with limited resources and knowledge.

3.5

Who will be the Design Thinking and Innovation specialist at your school?

It is best to train your existing teacher to implement the Design Thinking and Innovation curriculum in your school. The Teacher's Manual is made available in order to facilitate and support this activity.

CBSE will be providing training to teachers of the schools.

The DT&I course will be made easy to understand and deliver even with limited resources. This will facilitate teachers located in remote areas.

3.6

What will the impact of implementing Design Thinking and Innovation curriculum in Schools?

This subject will impact in the following ways:

- The Design thinking Process will impact all aspects of Schools including innovative thinking of teachers
- This will help a large number of schools that already have Atal Tinkering Lab and need to integrate this process for productive outcomes.
- This will help to ensure focused utilization of various government schemes and policies towards design and innovation

4.0

References

Reference 1: <https://dsource.in/resource/quotes>

Reference 2: <http://designindia.net/institutions/design-information/design-questions>

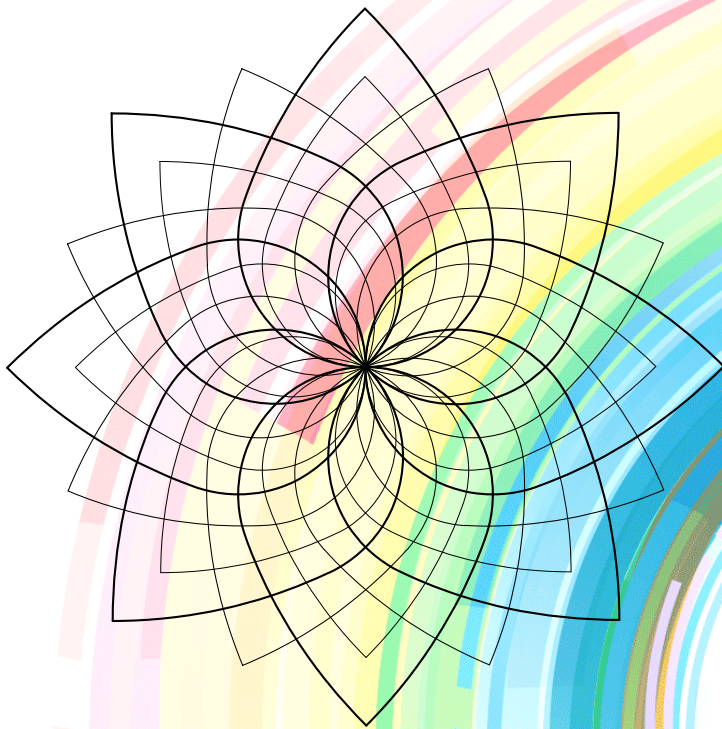
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Thank You



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