



# No Food Waste Challenge

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## **GRADE**

Appropriate for Grade 5 and above

## **CONNECT TO COURSE MATERIAL**

Class 5 (CBSE) Environmental Studies (Food spoilage)

Class 5 (SCERT) Environmental Studies (Methods of preserving food)



# What is This Challenge About ?

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## Outline

Design is a collaborative and iterative process that involves real-world problem solving. This challenge is an attempt to provide students an opportunity to work together and to think of innovative solutions to avoid food wastage. Students will also work towards creating a quick prototype of their idea and communicate their ideas to their peers.

## Design Thinking Cycle Stages Covered

Understand - Imagine - Select - Build - Evaluate - Improve - Share

In this challenge, students first spend some time to **understand and reflect** on the problem. They then **imagine and ideate** on possible solutions to address the problem. Once they have multiple solutions, they will work towards **selecting** one solution which is most suited and feasible. Then they will **build a prototype** of their idea and get it **evaluated** from their peers. Once they get feedback from their peers, they work towards **improving their idea and communicating** it with the rest of the class.

## Total Time and modules

180 mins/ 3 hours for 6 modules

## Learning Objectives

In this module, students will be able to:

- List reasons for food wastage.
- Connect this topic with textbook chapters.
- Generate multiple ideas for a real-world problem.
- Make a prototype of their design.
- Develop empathy and learn to think from another person's viewpoint.
- Understand a situation and analyse it.
- Collaborate and work in groups.
- Make and take constructive criticism for ideas.





# No Food Waste Challenge

## Lesson Plan 1

Understand Phase

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### Time

35 mins

### Materials required (Teacher)

Give worksheet 1 to each group.

### Design Thinking Stage

Understand

### Materials required (Students)

Pencil, paper and stationery for drawing

### Classroom Mode

Storytelling

Group work

### Objective of the lesson plan:

To introduce the issue of food wastage to the students via sharing of facts and a story.

# Lesson 1 Details

10 Mins /DISCUSS

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“Remember children, we discussed about different foods and food spoilage. If food gets spoilt, it is unfit for consumption. So we have to throw it away. This is called food wastage. Now, let’s talk about the larger problem of food wastage across the country”.

## Did you know ?

**India ranked 94 among 107 countries in the Global Hunger Index 2020 and is in the ‘serious’ hunger category** (Global Hunger Index, Concern Worldwide and Welthungerhilfe, 2020)

**Between 1990-2005, the number of hungry people in India has increased by 65 million. This figure is more than the entire population of France.** (Oxfam Report, 2011)

**It is estimated that saving one-fourth of the food currently lost or wasted globally would be enough to feed 870 million hungry people in the world.** (UN Website: <http://in.one.un.org/reducing-food-waste-vital-indias-food-security/>)

**In July 2017, Minister of State for Food Processing Industries, Sadhvi Niranjana Jyoti said that food worth Rs 92,000 crore is wasted every year. Rs 92,000 crore is approximately 67 million tonnes of food, higher than Britain’s national food output; enough to feed Bihar’s entire population for one year.** (Source: <http://www.financialexpress.com/economy/world-food-day-poor-on-global-hunger-index-ranking-india-wastes-40-of-its-food-produce/896284/>)

## CAN WE DO SOMETHING ABOUT THIS ?

## 10 Mins /READ OUT

- Divide the students in groups of 3 to 5 (maximum). Spend 5-7mins on this activity.
- Read out "Madhavi's Story" and introduce the problem to the students.

### MADHAVI'S STORY

1



Madhavi is a 10 year old girl.  
She lives in Raigad in Maharashtra.  
She studies in Class V in a school  
near her house.

Image Source :<https://www.pngaaa.com/detail/4378162> (CC-NC)

2 In her school, food is served under the mid day meal scheme. Everyday, Rekha Tai sits outside the class with big containers of food and every child brings their lunchbox/ dibbar/plate to her.



Image Source :Hemanshu Kumar/ Flickr/ CC2

3 A typical meal consists of chapati/rice, pulses(dal) and cooked vegetables.



4



Madhavi observed a few things happening everyday.

Even though wasting food is discouraged in the school, the dustbins are full of food waste.

This quantity of food waste varies from day to day.

5



Madhavi does not like food being wasted at all.

She tried to speak to other students about not wasting food. But that did not work.

*Image Source :<https://www.pngaaa.com/detail/4378162> (CC-NC)*

6 She is out of ideas and needs your help to solve this problem.

**15 mins/ THINK**

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- Distribute the worksheet 1 to each group.
- Ask students to write down their thoughts in the worksheet after listening to the story.
- Remember, these are insights that children will form from their own perspectives and earlier experiences.
- Encourage them to think independently at this stage.



# No Food Waste Challenge: Student Worksheet 1

## OBSERVATION RECORD

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Name of Team member	Age	Class

### LEARN AND FEEL - Observe, Question and Empathize

1. After listening to Madhavi's story, why do you think food is being wasted? List the possible reasons here.

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# No Food Waste Challenge: Student Worksheet 1

## OBSERVATION RECORD

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2. Have you experienced food wastage in your school and surroundings?  
Write down your experiences.

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3. Have you seen ways that have been successful in preventing food wastage?

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## No Food Waste Challenge

# Lesson Plan 2

Imagine Phase

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### **Time**

30 mins

### **Design Thinking Stage**

Imagine

### **Classroom Mode**

Sketching  
Group work  
Play (Bingo Tool)

### **Materials and Preparation (Teacher)**

Give worksheet 2 to each group.  
Make one Idea Generator Bingo Tool (T1)  
for each group.

### **Materials required (Students)**

Plain sheets of paper  
Pencils, pencil colours

### **Objective of the lesson plan:**

To imagine new solutions to the problem articulated in the first lesson.

# Lesson 2 Details

## 10 Minutes /DISCUSS

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- Spend few minutes on discussing the most common and most unique observations written by teams in worksheet 1.
- Divide students into their groups like last lesson, and encourage them to think of new ways and ideas of reducing the problem of food wastage.
- Atleast 2 different solutions must emerge from each group.
- Ask students to draw their ideas in the space provided in worksheet 2.

This is the design challenge:

Design something that can encourage students to reduce food wastage.

## 20 Mins /IDEATION

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- Distribute worksheet 2 to each group.
- Distribute the Idea Generator Bingo Tool (T1) to every team after 10 minutes of ideation time.
- During ideation, move from one group to another and encourage students to think of varied ideas by going through each of the points mentioned in the Idea Generator Bingo (T1). Ask students to tick the options they use in the Bingo Tool.
- Encourage students to draw their ideas as much as possible.
- Leave some time for discussion of ideas with each group.

## The Idea Generator Bingo Tool (T1)

This tool is designed to enable students to think of as many different ideas as possible.

### How to Use Idea Generator Bingo Tool ?

- After 10 minutes of brainstorming and ideation, distribute one Idea Generator Bingo among each group.
- Each block of the bingo square contains a new line of thought for ideas to the problem. Remember, these are just indicative directions of thought.
- Each time students draw an idea from a specific line of thought from the Bingo Tool, they can cross it out.
- Teacher should encourage groups to cross out all the blocks in their Bingo Tool.

### Note:

This tool is especially helpful if groups:

- Have not been able to generate many ideas.
- Have generated many ideas but they are of a similar type. For eg., all their ideas involve some form of posters.
- Have generated many ideas but none of them are unique.



# No Food Waste Challenge: Student Worksheet 2

## IDEATION SHEET

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Name of Team member	Age	Class

### **IMAGINE - Think new Ideas**

Use this sheet to come up with ideas for the given problem

#### THE DESIGN CHALLENGE

How to encourage students to reduce food wastage ?

- Think of as many solutions as possible.
- Explain your ideas through drawings and some text.

# No Food Waste Challenge: Student Worksheet 2

## IDEATION SHEET

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# No Food Waste Challenge: Student Worksheet 2

## IDEATION SHEET

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# No Food Waste Challenge: Tool 1

## IDEA GENERATOR BINGO TOOL

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HOW TO USE THE TOOL :

- Each block of the bingo square contains a new line of thought for thinking of ideas to the problem. Remember, these are just indicative directions of thought.
- Choose one line of thought and think of a new solution using it.
- Each time, you draw an idea from a specific line of thought from the Bingo Tool, cross it out.
- Try to cross out all the blocks in your Bingo Tool.

<p><b>THINK LIKE SOMEONE ELSE</b></p> <p>Example: Think like your teacher. What new idea could they think of?</p>	<p><b>FIRST THOUGHTS</b></p> <p>Write down the first idea in your mind.</p>
<p><b>PLAY</b></p> <p>Can the solution be made fun for people?</p>	<p><b>FLIP THE CHALLENGE</b></p> <p>Think of the problem in reverse. What discourages people?</p>
<p><b>GO CRAZY</b></p> <p>Think and draw your most crazy idea.</p>	<p><b>THINK DEEP</b></p> <p>What encourages people to do anything? Apply this to the challenge.</p>



## No Food Waste Challenge

# Lesson Plan 3

Select Phase

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**Time**

30 mins

**Design Thinking Stage**

Select

**Classroom Mode**

Group work with  
Interactive tool

**Materials and Preparation (Teacher)**

Idea Selection Lens Tool (T2) to be  
printed and made ready per student  
group.

**Materials required (Students)**

*None*

**Objective of the lesson plan:**

To select the most viable idea of all the ideas generated by each group.



# Lesson 3 Details

**35 Mins /EXPLAIN AND SELECT**

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- Ask students to spend some time to review, expand and improve their ideas.
- While refining their ideas, remind students that the most important thing is to refer back to the design challenge “How to encourage students to reduce food wastage?” They should ask themselves: Does our idea address this challenge?
- Hand over 1 Idea Selection Lens Tool (T2) to each group.
- Groups will now evaluate their ideas using the Idea Selection Lens Tool (T2). This tool will help students to decide which are their best ideas.

## **The Idea Selection Lens Tool (T2)**

The objective of this tool is to enable students to select their best ideas to work on. Each panel of this tool contains one selection criteria for a good design.

## **How to use the Idea Selection Lens Tool (T2)**

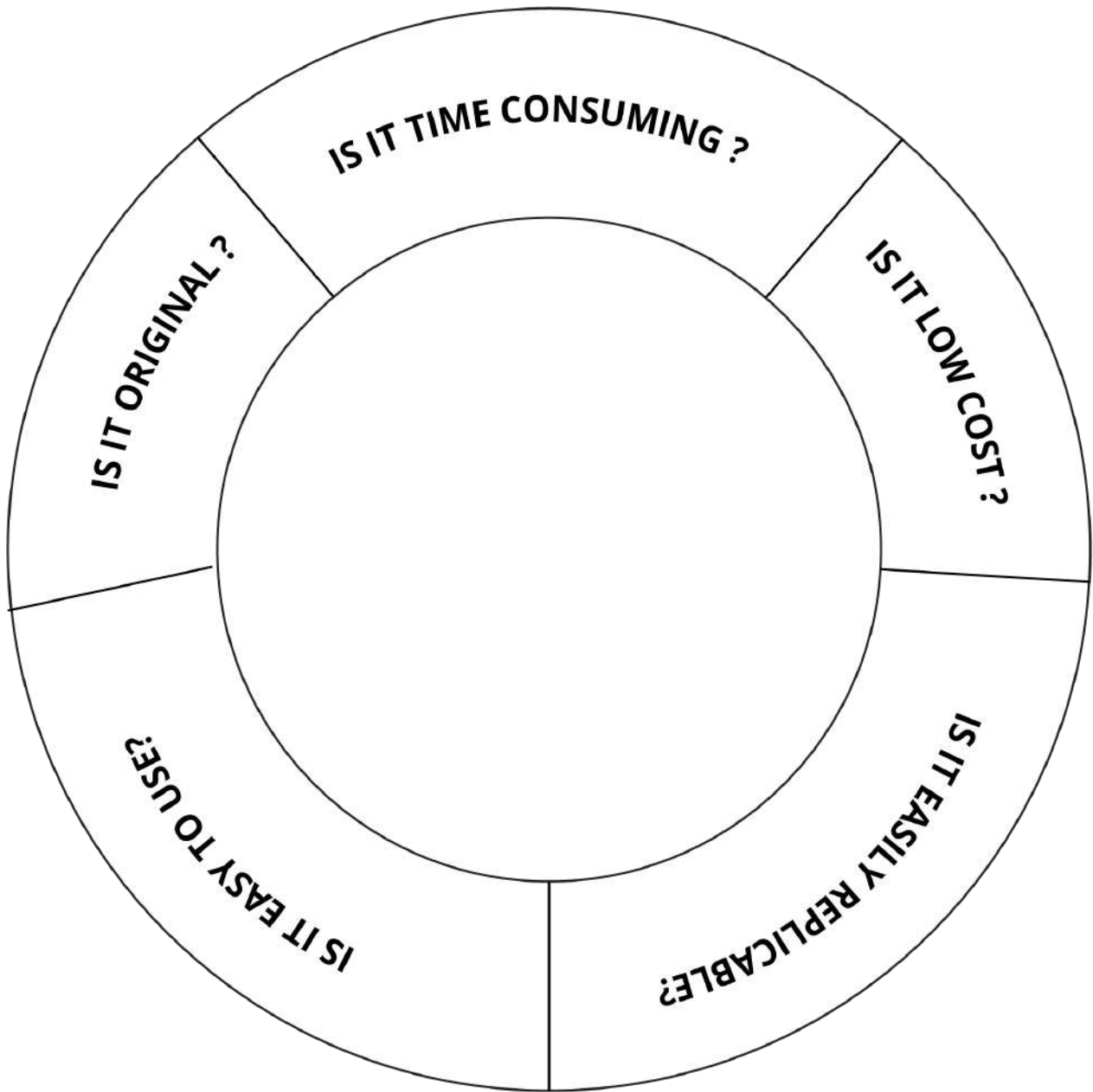
- Ask groups to evaluate their ideas using the lens.
- This lens has many criteria for selecting a good design.
- Ask students to put the lens on one idea and see how many criteria are being fulfilled. Let the students make a note of it and then move on to the next idea.
- Ask students to evaluate all their ideas using the tool.
- Finally, ask each group to collectively select their best idea, based on their evaluation.

T2

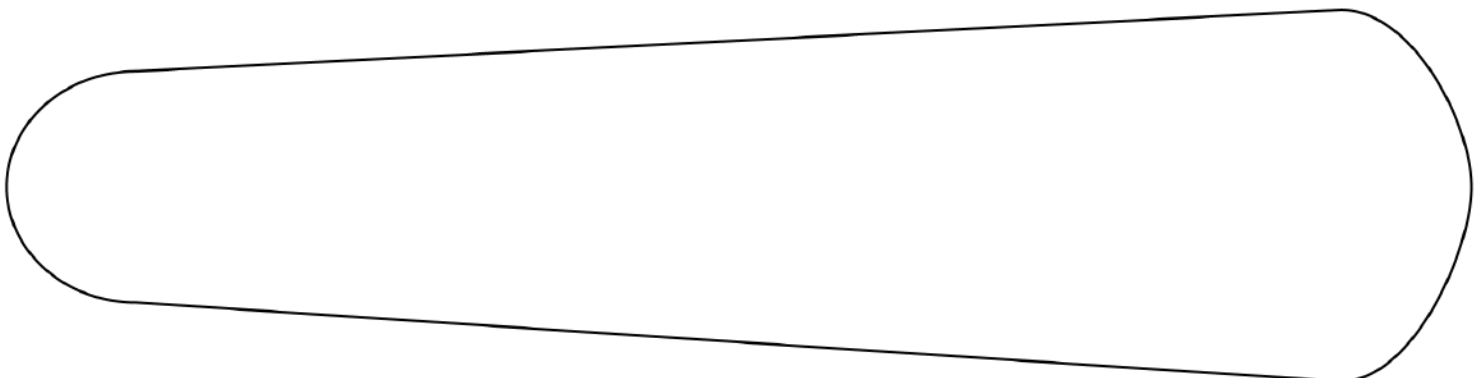
# IDEA SELECTION LENS TOOL

## Instructions

1. Stick this template on a Cardboard/ thickpaper.
2. Cut along the shape of the 2 parts.
3. Stick the Lens and Handle together to create your very own "Idea Selection Lens Tool".



PART 1-LENS



PART 2-HANDLE



## No Food Waste Challenge

# Lesson Plan 4

Build and Show Phase

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### Time

40- 60 mins

### Design Thinking Stage

Build

### Classroom Mode

Group work

### Materials and Preparation (Teacher)

Prototyping material like paper, cardboard, ropes, threads, stationery and tools, glue, etc need to be made available prior to the session. As much as possible, use discarded materials like waste cardboard boxes, packaging material, newspaper, etc.

### Materials and Preparation (Students)

Helping teacher arrange prototyping material before class.

### Objective of the lesson plan:

To build a prototype of the selected solution.

# Lesson 4 Details

**10 Mins /BUILD**

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- Give student groups 30-40 mins to make their prototype/ model.
- Encourage this as an in-class room activity as it will require students to collaborate with one another.
- Ensure that some students don't dominate over others in the group, during sharing of tasks, work allocation and decision making.
- Ask students to maintain a log on the challenges they faced during making their prototype.
- Once the prototype is made, ask students to display their models to the rest of the class.



## No Food Waste Challenge

# Lesson Plan 5

Test / Evaluate Phase

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### Time

30 mins

### Materials required (Teacher)

Worksheet 3 for each group.

### Design Thinking Stage

Evaluate

### Materials required (Students)

Pencil, paper and stationery for drawing

### Classroom Mode

Group work

### Objective of the lesson plan:

To evaluate an existing design.



# Lesson 5 Details

10 Mins /DISCUSS AND EXPLAIN

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- Teacher can request each of the groups to get their idea evaluated by their peers.
- Distribute worksheet 3 to each group. Each group can use this worksheet to write the feedback they received and the changes they want to make based on the feedback as well as questions that remain to be asked.

## **How to do peer-evaluation?**

- Groups will interact with their peers during free time and communicate their idea using the prototype they have built. Ask groups to give their prototype to their peers for evaluation.
- Students will be asked to give feedback on whether the model they are evaluating will actually help in addressing the problem, that is reducing food waste.
- Encourage students to install their ideas at various places in the school and talk to real users (students and teachers).
- If other students are not available for feedback, each group helps in the evaluation of the other group's idea/model.

# No Food Waste Challenge: Student Worksheet 3

## EVALUATION MATRIX

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Name of Team member	Age	Class

Strengths / best parts of the solution	Problems and/or shortcomings of the solution
Changes identified by you in your design based on the feedback received	Questions that remain to be asked



## No Food Waste Challenge

# Lesson Plan 6

Improve and Share Phase

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**Time**

30 mins

**Materials required (Teacher)**

*None*

**Design Thinking Stage**

Improve and Share

**Materials required (Students)**

*None*

**Classroom Mode**

Group work

**Objective of the lesson plan:**

To share the designs /models /prototypes made by the students with their peers.

# Lesson 6 Details

## 15 Mins / IMPROVE OR RE-ITERATION

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- Give students 15 mins to improve their solution based on the feedback received during peer evaluation. Reiteration or going back to improve one's design is the essence of design thinking.

This can be set as an out-of-class activity where students can improve upon the designs and get newer models in class.

## 15 Mins /SHARE

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- Give each group 5 minutes to present their final idea to the class. They may chose to explain their idea using powerpoint or any other audio-visual means.

Note to the teacher: Share the photographs of the worksheets and prototypes of each group with us and we will showcase students' work on our website\_ <https://dnte.hbcse.tifr.res.in/>

Email checklist

1. Teacher's name
2. Group name
3. Names of the students in the group
4. Class
5. Name of the school
6. Photographs of Worksheet 1, 2 and 3
7. Photograph of the prototype.

Our email ID: [dnte@hbcse.tifr.res.in](mailto:dnte@hbcse.tifr.res.in)