



ENHANCING CIVIC
ENGAGEMENT

WASTE MANAGEMENT

TEACHER'S GUIDEBOOK

Class V



State Council of Educational Research and Training
Government of Goa

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Class V

Guidebook for teachers which will provide directions to carry out different activities, conduct school events and also provide guidelines to execute community engagement projects

Approved for pilot by -

**State Council of Educational Research and Training (S.C.E.R.T.)
Government of Goa**

Subject Linkages Sheet for Waste Management Std-V

No.	ECE Activities	Subject Linkages Chapter Number, Name & Page No
	Topic 1. Introduction to waste and product lifecycle -	EVS - Part 02
1	Lesson/Activity plan: Concept teaching - Introduction to waste and product lifecycle	5th-EVS, Part-2, CH -16 - Who will do this Work? Page No - 147
2	Activity 1: Art & Craft Activity.	
3	Activity 2: Waste Audit for Self.	
4	Activity 3 - Waste trail of school.	
5	Activity 4 - Chart/collage on recycling.	
	Topic 2: Zero Waste and 3'R's	EVS - Part 01 & 02
1	Lesson/Activity plan: Concept teaching - 3 R's - Reduce, recycle, reuse	EVS, Part 2, CH -12 - What if it Finishes...? Page - 110
2	Activity 1 - Paper bag making activity.	
3	Activity 2 - Chart making on zero-waste and 3 'R's.	
4	Activity 3 - Speeches on waste management and recycling.	
5	Activity 4 - Best out of waste competition.	
6	Activity 5 - Success story of zero-waste town in India.	
	School - level activities/events	
1	Litter-free zone in school	EVS, Part 01, CH - 8 - A Treat for Mosquitoes, Survey report, Page - 74
2	Display of good practices of waste management	
3	"Carry a bag, not carry bag!" campaign	
4	Observe the recyclable vs. non-recyclable waste	
	Community-level projects	
1	Signature campaign	(To be planned in the school yearly plan as part of exposure visits/eco clubs/science committees/value education/art & craft period/work experience period/scouts & guides , science exhibition/science experiments or on Special day like 15th August or 26th January)
2	Guest speaker	

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Topic 1. Introduction to waste and product lifecycle

- 1.1 What is waste? What are the types of waste?**
- 1.2 Waste segregation, importance of waste segregation, waste treatment**
- 1.3 Product lifecycle and packaging**
- 1.4 Recycling - Concept, meaning and importance**

Expected outcomes

At Student level -

- 1. Students are motivated to adopt a zero-waste lifestyle.
- 2. Students will understand the concept of zero-waste-school and raise awareness at their homes and community about the same.
- 3. Students will understand the product to disposal cycle.
- 4. Students will acquire the necessary skills for segregation of different types of waste and become aware of the harmful effects of not segregating and managing the waste.
- 5. Students will value the benefits of recycling and proper waste treatment.

At School level -

- 1. The teachers are trained.
- 2. The community avails of bins and is able to segregate waste.
- 3. There is mass awareness among students, parents and the community.
- 4. Waste audit gets conducted in schools.
- 5. Zero-waste-school initiatives start in schools.
- 6. Schools will be able to bring attitudinal changes in students.



Lesson/Activity plan: Concept teaching - Introduction to waste and product lifecycle

Time	Activities	Resources/ TLM
5 min	Step 1: Brainstorming - 1. Ask students - <ol style="list-style-type: none"> What is waste? Where does it come from? What are the different kinds of waste produced at your home and in class on a day- to-day basis? What do you mean by dry waste and wet waste? How can we recycle or reuse the waste produced by us? Do you know that waste has many harmful effects on the environment? If yes, what are they? 2. Engage students in a discussion with the above probing questions.	Blackboard
45 min	Step 2: Concept teaching - (Refer to student book) Topic 1 - Introduction to waste and product lifecycle <ol style="list-style-type: none"> 1.1 What is waste, types of waste 1.2 Waste segregation, importance of waste segregation, waste treatment 1.3 Product lifecycle 1.4 Recycling - Concept, meaning and importance <ol style="list-style-type: none"> 1. Give reference to brainstorming session and discussion. 2. Try to give as many examples as possible. 3. Use 1-2 teaching aids for concept teaching, use a chart (or a ppt/video, wherever available) for concept teaching to make it more interesting. 	Verbal discussion + handouts + student book



	<p>4. Video options -</p> <p>How do I help earth - https://www.youtube.com/watch?v=zACy6KsVm8k</p> <p>Waste segregation methods and importance - https://www.youtube.com/watch?v=oGpvwX-kB2o</p> <p><i>(Teacher can break it down into 2-3 sessions as per time availability.)</i></p>	
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Activity 1 - Art and craft activity

Making a bookmark on waste management theme

**Activity time - 1 day
for home assignment**

TLM - Video/process chart

Material required - Coloured pencils, markers, pastels, crayons, card paper, scissors, hole punch, ribbon

Steps for activity - (<https://www.wikihow.com/Make-a-Bookmark>)

1. Choose a suitable paper. Select a heavy cardstock-like paper to act as the support for your bookmark, and then choose an image or pattern to glue over the top. Feel free to make a collage of other papers or select multiple images if you want.
2. Cut the paper. The size of the bookmark is up to you. Cut the cardstock into a small, less obtrusive bookmark that's only an inch long, or choose to make a more traditional-sized bookmark measuring 2-3 inches wide.



- OR**

This activity takes 2-3 days and can be given as a home assignment.

Steps for activity -

1. Screen the video in the classroom (<https://www.youtube.com/watch?v=ELWf8oyrPLk>).
2. Explain to the children the steps to be followed to make Paper mache pen stand.
3. Ask them to make Paper mache pen stand material at home. (Don't restrict them to make a particular item; ask them to use their own creativity.)
4. Display their items in the classroom and appreciate their efforts.
5. This activity can also be done in groups in the classroom.



Activity 2 - Waste audit for self

Activity time - One day for collection, 20 minutes for classroom discussion

Material required - Waste bags, weighing machine, waste audit sheets (Student book, record sheet, activity 2)

Steps for activity -

1. Explain to the students the importance of waste reduction before conducting the activity.
2. Get students to think about waste by holding a classroom discussion. Ask students: What is waste? What types of things get thrown away? What material do you think gets thrown away the most? What happens to the trash that we throw away? Where does it go? How many kilograms of trash do you think you produce each day?
3. Explain to the students that for this activity, they would be keeping track of the waste items they would normally throw away.
4. Distribute two separate trash bags each among the students.
5. All items that would be discarded, will be put into the trash bags.
6. Separate dry and wet wastes produced during the day, and in the evening, weigh each bag and record the waste audit results in the student's activity book.
7. Now dispose of the waste in the proper containers.
8. Hold a class discussion on what the students learned through this process. Use this discussion to begin talking about the changes required or the ideas that the students have, to reduce waste at the school.

Activity 3 - Waste trail of school

Activity time - 2 periods/40 minutes for visit, 15 minutes for interaction with sanitary worker, 15 minutes for filling record sheet

TLM - Record sheet (Student book, record sheet, activity 3)

Steps for activity -



1. Explain to the students that for this activity, they would be observing and following the waste trail starting from the school premises. They would see why it was necessary to understand the whole cycle from trash to treatment.
2. Ask the students to observe the areas visited during the activity and make notes of the following -
 - Place visited
 - Waste segregation methods
 - No. of dustbins placed by school and labelled
 - Estimated amount of trash
 - Common dumpsite of school (where the waste from all the dustbins in the school is collected) and how it is managed
3. Take the students for a visit to different areas where trash is produced.
4. Invite a sanitary supervisor to the class and ask him/her to tell the students about the waste trail of the school and what happens with the trash from common trash bins.
5. Encourage the students to ask questions.
6. Ask the students to write their learnings and experiences of the activity in the student's activity book.



Activity 4 - Chart/collage on recycling

Activity time - 1 period/35 minutes

Material required - Supply of newspapers, old magazines, scissors, tape, glue, colour pen

Steps for activity -

1. Explain to the students that for this activity, they would be making a chart or collage on recycling. Ask them to use their learnings from the classroom discussion held on recycling.
2. Divide the class into 5-6 groups.
3. Provide them with all the materials required for this activity.
4. Ask them to make a collage/chart on the recycling process, benefits, items, segregation of waste, etc. Instruct them to use their creativity and make this more attractive.
5. After the activity, display their charts/collage in the classroom and recognise the good ones. Encourage healthy competition in the class.

Student's book worksheets:

1. **Product lifecycle and packaging**
2. **What am I made up of?**
3. **Compare waste segregation methods of class and home**



Topic 2. Zero-waste and the 3 'R's

- 2.1 Zero-waste - Definition and importance
- 2.2 Reduce, reuse, recycle - Concept of the 3 'R's, definition and importance
- 2.3 Waste hierarchy and how to adopt the 3 'R's in practice

Expected outcomes

At Student level-

1. Students will understand the linkages and chain of waste generation.
2. Students will appreciate nature and its recycling capacity - nature as a source and sink.
3. Students will understand the importance of achieving zero-waste with the help of the 3 'R's.

At School level-

1. Networking with organisations working towards recycling
2. Setting up recycling units at school level
3. School would be able to create a healthy culture of zero-waste through waste reduction, reuse and recycling of materials
4. School would help the students and the community understand the steps to be taken towards a zero-waste lifestyle.
5. School would become a catalyst/role model for the community to create a zero-waste culture

Lesson/Activity plan: Concept teaching - 3 'R's - Reduce, recycle, reuse

Time	Activities	Resources/ TLM
5 min	Step 1: Brainstorming - Ask probing questions to the students to recap their last chapter's learnings- <ol style="list-style-type: none">a. What does waste mean for you?b. What are the different types of waste?	Blackboard



	<p>c. What do you understand by zero-waste?</p> <p>d. What do you understand by the terms - Reduce, reuse and recycle?</p> <p>Engage students in a discussion with the above probing questions.</p>	
30 min	<p>Step 2: Concept teaching - (Refer to student book)</p> <p>Topic 2: Zero-waste and the 3 'R's -</p> <p>2.1 Zero-waste - Definition and importance</p> <p>2.2 Concept of the 3 'R's, definition and importance</p> <p>2.3 Waste hierarchy and how to adopt the 3 'R's in practice</p> <ol style="list-style-type: none"> 1. Give reference to the brainstorming session and discussion. 2. Try to give as many examples as possible. 3. Explain the meaning of the 3 'R's and their importance to students. 4. Explain waste hierarchy to them. <p><i>(Teacher can break this down into two sessions as per time availability.)</i></p>	Verbal discussion + handouts + student book
10 min	<p>Step 3: Group exercise -</p> <ol style="list-style-type: none"> 1. Divide the blackboard into three sections and write "Reduce, reuse and recycle". 2. Ask the students to recall the things they use daily and under which category they can be covered. 3. Encourage the students to speak one by one and motivate those children who don't speak by giving some hints. 4. Finish the list and revise in the class. 	Blackboard



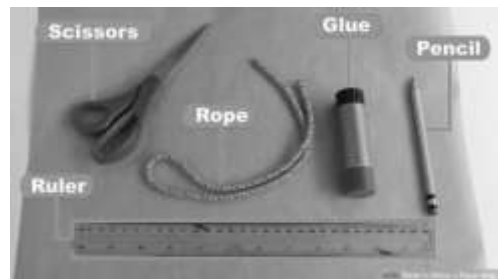
Activity 1 - Paper bag making activity

Activity time - 5 minutes for
video display

Material required - Given below

Steps for activity -

1. Display the video (<https://www.youtube.com/watch?v=OMdyqbIUjVY>) and ask the students to carefully watch the steps.
2. Or, make the process chart in advance and display in the classroom.
3. Or, call an expert to demonstrate the paper bag making process to students.

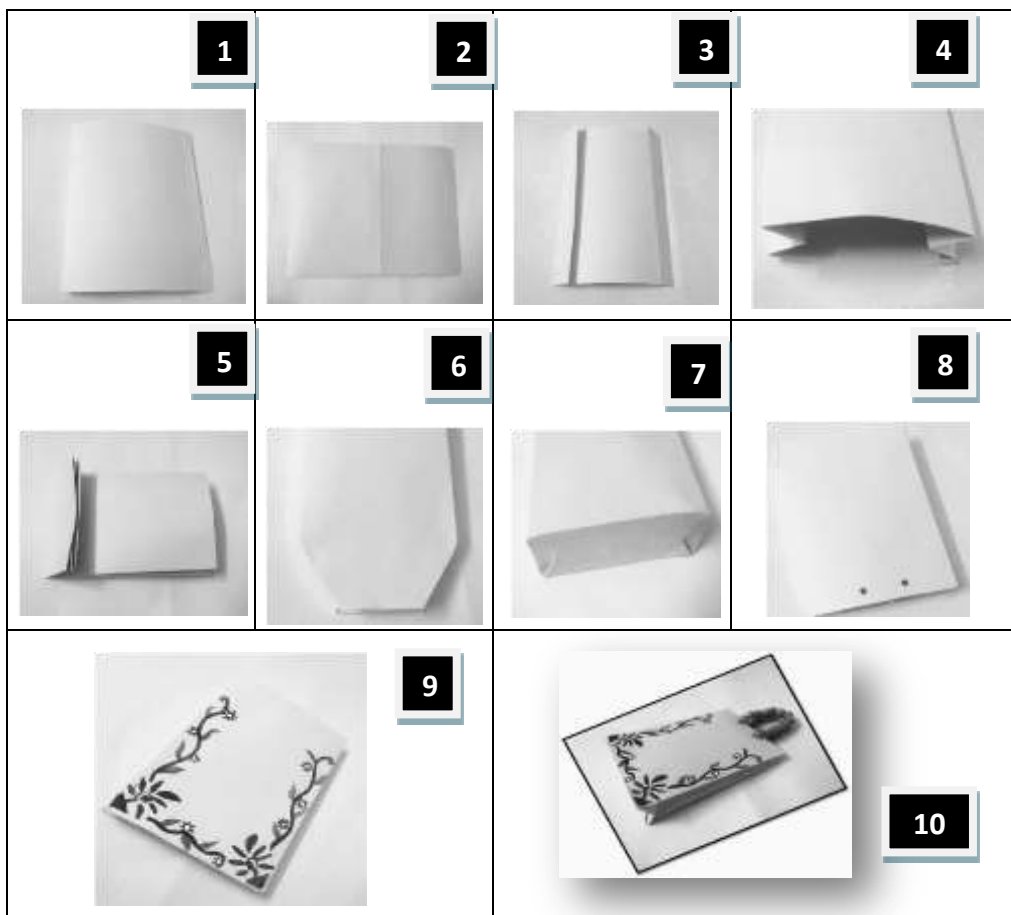


Easy steps to be taught in class by the teacher -

- Step 1:** Take a piece of chart paper and make a crease at the centre.
- Step 2:** Paste the two sides together with glue. Allow it to dry for some time.
- Step 3:** Fold both sides of the paper. The thickness of the fold will determine the space inside the bag; this will become the width of the bag, so accordingly make the fold.
- Step 4:** Open the folds, and along the creases, make inward folds on both the sides as shown.
- Step 5:** Fold the bottom of the bag for a length of around two inches. This will depend on the size of the bag you are making.
- Step 6:** Unfold the last fold made. Along the side crease, fold inwards to form a triangular-shaped edge.



- Step 7:** Fold the flap inwards and flatten it as shown below. Paste the two flaps together using glue and press so that the base is firm.
- Step 8:** Using a punching machine, make two holes on both sides of the bag to attach the handle.
- Step 9:** If the bag is plain-looking and you want to add some colour to it, use watercolours or poster colours to add some designs to the bag. Alternatively, you can use gift wrappers to jazz up your bag a little.
- Step 10:** Attach a handle to the bag using the holes made. You can attach simple plastic or thread handles to the bag as well.



Activity 2 - Chart making on zero-waste and the 3 'R's

Activity time – 25 minutes

Material required - Chart paper, scissors, glue, colour pens, old newspapers and magazines

Steps for activity -

1. Divide the class into three groups and ask them to choose any one R out of the 3 'R's.
2. Ask them to develop a chart depicting the meaning of their chosen R - materials which can be reduced/reused/recycled and how to adopt this into practice.
3. Use newspaper and old magazine cuttings for pictures.
4. Decorate the chart.
5. Display the charts on the blackboard and present in the class.

Activity 3 - Speeches on waste management and recycling

Activity time - 35 minutes

Material required - NA

Steps for activity -

1. Ask the students to prepare speeches on waste management, recycling and its importance, and the harmful effects of waste.
2. Allow them to speak in class for 5-10 minutes.
3. Call for voluntary participation.

Activity 4 - Best out of waste competition

Material required - Waste material, glue, colours

Time required - 45 minutes for creating the item, one period to display and present

Steps for activity -

1. Inform the students about the date of the competition and ask them to prepare and choose the item they want to create from waste products. They can also discuss with their elder siblings and parents about this.



2. Hold the competition for one whole period.
3. Display all the items prepared by the students and call other teachers and students to show the displayed items.
4. Let the students explain why they have chosen this item, what material has been used, and the utility of the product created.

Activity 5 - Success story of a zero-waste town in India

Material required - NA

**Activity time - 35 minutes/
one period**

Steps for activity -

1. Explain to the students the importance of zero-waste through concept teaching and discussion.
2. Give them a brief on the following story of a 'zero-waste town':

Bobbili - A zero-waste town



Bobbili town in Andhra Pradesh is famous for the Venugopala Swami temple, but there is something else the locals are proud of as well. This town boasts of being a zero-waste zone, which simply means that all its garbage is recycled or reused. None of it reaches the landfill.

At the heart of this movement is an 8.5-acre solid waste management park, which, from the outside, looks like a regular garden, complete with farm animals and lakes. In this park is a processing unit that creates compost and biogas out of organic waste. Paper is also segregated from other kinds of waste and sold off to paper mills.

But what happens in the park does not begin there. The 50,000+ residents of the town begin the process of waste management in their homes, where they segregate garbage into wet and dry waste. They have been doing this since 2011.

The municipality then collects this waste in separate bins and transports it to the park. In the park, there's further segregation. Here, animals like ducks, dogs, pigs and chickens are also involved. Pigs eat up most of the food waste from hotels; ducks take care of leftovers from the fish market, and dogs eat leftover meat from homes. The other organic waste is converted into compost which can be used for gardening and agriculture. Animal dung is used in the seven biogas production units, which provide cooking gas within the premises, which is used by the workers to prepare their meals.

According to Suresh Bhandari, a solid waste management expert who has contributed to making Bobbili a zero-waste town, the highlight of the exercise has been getting people to understand the importance of separating the waste. Self-help groups have held rallies and motivated people and children. Concepts of waste management have been explained to children in schools, who in turn have shared these with their parents. The municipality has also distributed separate bins to help people understand and segregate, and it has held special training workshops for its staff too. Additionally, plastic bags were banned, door-to-door collection was



initiated, and effective transportation and processing of waste were established.

Source - <http://www.satyamevjayate.in/Dont-Waste-Your-Garbage/EPISODE-3Article.aspx?uid=E3-Cities-A1>

3. Start a discussion by asking questions based on the story -
 - a. What did you understand about the zero-waste concept?
 - b. How did the people of Bobbili town achieve this goal?
 - c. What were the small steps taken by each household and the municipality towards this goal?
 - d. How can we also make our home/community a zero-waste home/community?
4. Sum up the discussion with concluding comments by the students on the importance of a zero-waste life and solutions to achieve this.

Student's book worksheets -

- 1. Identify the recyclables**
- 2. The 3 'R's**



School-level activities/events

1. Litter-free zone in the school

1. Form an eco-club in the school. Call for voluntary participation from students and keep the maximum member count at 20. Let the members identify an area in the school where they can set up a litter-free zone. It must be an area that most students visit regularly and so, the chances of littering are very high. For example, it can be the playground, assembly or canteen.
2. The activity is to make the area a "litter-free zone" within the month. Mark it, label it, place dustbins, put posters and slogans, and decorate the area in your own way.
3. Showcase the pilot project and replicate this project in the entire school.
4. Teachers can help the eco-club members in taking permissions from the Principal and in lauding the success of the project.

2. Display of good practices of waste management

1. Students can collect news stories, facts and the best practices throughout the country for waste management.
2. Make charts or posters on the same.
3. Display the same on the school notice board on a rotational basis.
4. Students can also use the best practices in Goa and the people working voluntarily as success stories to be displayed.

3. "Carry a bag, not carry bag!" campaign

1. Announce the campaign and its objective.
2. Announce the campaign start date, end date, process and monitoring plan in the assembly.
3. Allow the eco-club members to spread the word on the school campus through charts, posters, slogans, etc.
4. Take a pledge with all the teachers, staff and students to follow this slogan "Carry a bag, not carry bag" and bring this in practice for the coming month.



4. Observe the recyclable vs. non-recyclable waste

1. Make a small compost pit in an open area under the teacher's guidance.
2. Ask the children to collect different types of waste from the school campus (paper, plastic, wooden straws, leftover food, leaves, etc.).
3. Take them to the compost pit by the end of the day to observe the pit and regularly spray some water.
4. Every 7th day, ask them to observe the pit and identify which waste materials have been fully converted into compost, which are half converted, and which haven't converted at all.
5. On the 7th day, discuss -
 - a. Which products have still not turned into compost? Why?
 - b. How are these products hazardous to the environment?
 - c. How can we reduce the usage of such items in our daily life?



Community-level projects

1. Signature campaign

1. Ask the students to make a simple pledge about "Waste management and my responsibilities for saving the environment" in 5-10 simple points.
2. Ask the students to form groups and explain the pledge to parents, neighbours and elders in their surroundings and take signatures on the "Save environment" pledge.

2. Guest speaker

1. Call some local recyclers/scrap dealers/corporates involved in e-Waste collection and recycling.
2. Hold a lecture or discussion with the children to make them understand the process and the impact of waste on the environment and health.



