

BUT I DID IT ONLY ONCE

(Std – VI Science Garbage In, Garbage Out)



Springdales School

**Pusa Road, New Delhi
(Affiliated to C.B.S.E.)**

DISCLAIMER

This graphic comic is a support material to develop the interest of the learners in understanding the concept of “Garbage disposal and its Importance”. The content is developed by the faculty of Springdales School, Pusa Road. This creative output ensures originality of content, ideas and illustrations.

The story has truly been the work of imagination and the characters and incidents are purely fictitious. The content aims to ensure the better understanding of the concepts to the students giving them a wide scope of many research oriented activities.

Certain characters, places and incidents are the product of imagination and any resemblance to actual persons, living or dead or actual events or locals is entirely coincidental. No part of this novel can be scanned.

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PREFACE

This graphic comic is an endeavour to introduce the concept of art integration with science. It advocates innovation for good pedagogical, research based reasons and impactful learning.

Through this graphic comic we intend to spread awareness about garbage disposal and its scientific importance by practicing 4R's that is Reducing, Reusing, Refusing and Recycling waste. The visuals and characters will provide in depth understanding of garbage, its sources and types.



0652CH16



To access the comic book and additional interactive digital content, download DIKSHA app from Google Play Store on your Android smartphone or tablet.

ACKNOWLEDGEMENT

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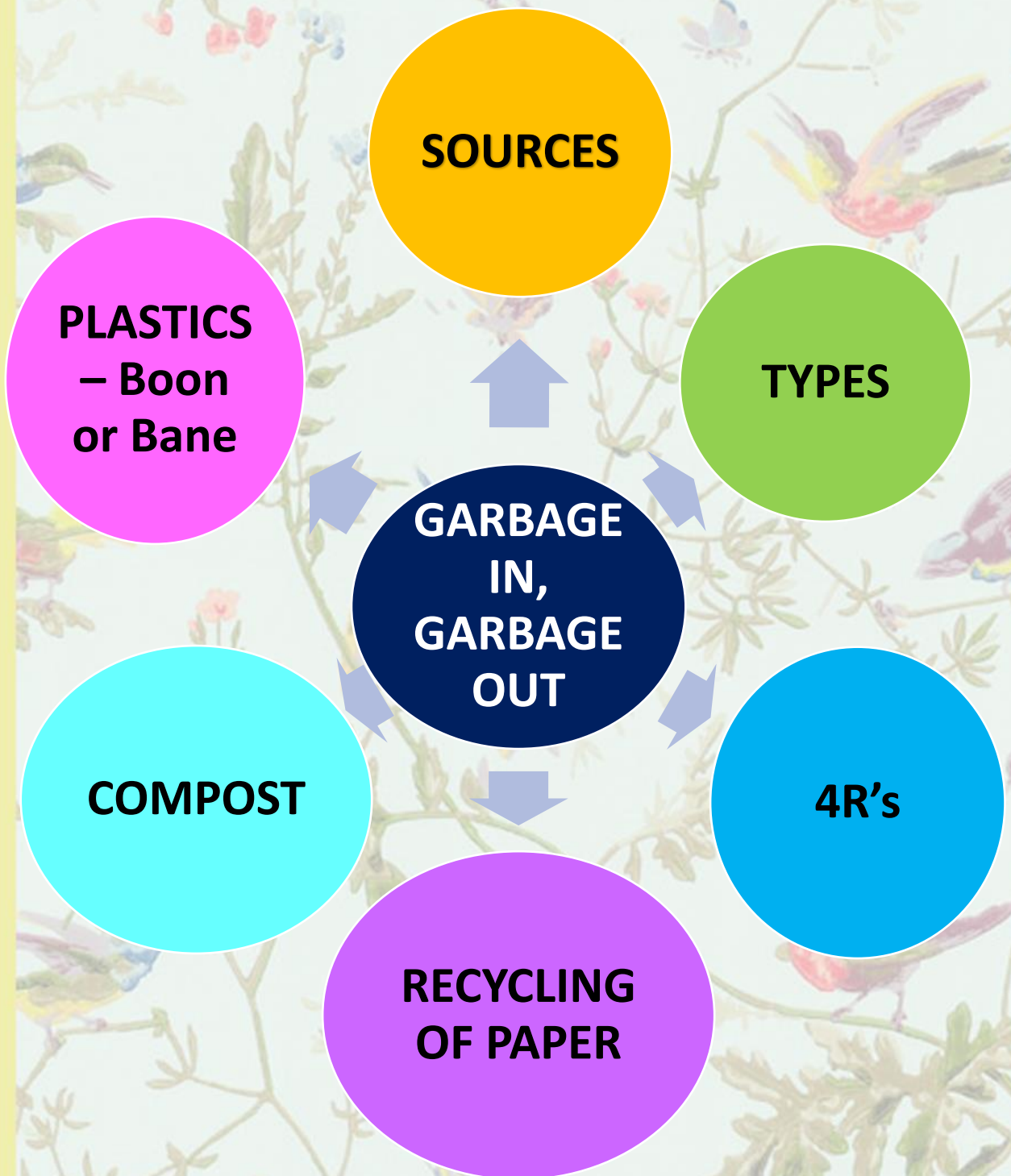
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LEARNING OUTCOMES

Students will be able to:

- Define the term garbage and estimate the amount of garbage produced on a daily basis.
- Identify the different sources of garbage.
- Differentiate between biodegradable and non-biodegradable wastes.
- Learn about the process of discarding waste at landfills.
- Understand the process of Vermicomposting and apply this technique to reduce domestic waste.
- Illustrate the importance of 4R's – Reduce, Reuse, Refuse and Recycle.
- Understand the process of recycling of paper and its utility in daily life.
- Discuss the ways of moderating the use of plastics, its applications as well as harmful effects on environment.
- Reinforce the ethical values like not to litter, waste segregation and art of recycling.

STORY BOARD



CHARACTERS



NISHTHA



SAUMYA



SRISHTI



KAMAKSHI



TEJAS



BHUMIKA

CHARACTERS



RAMYA



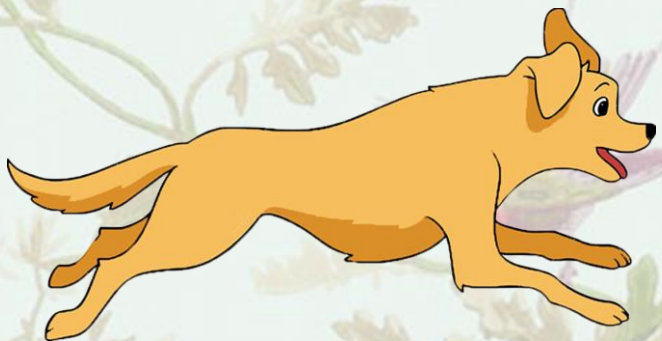
GAURANG



VANDANA



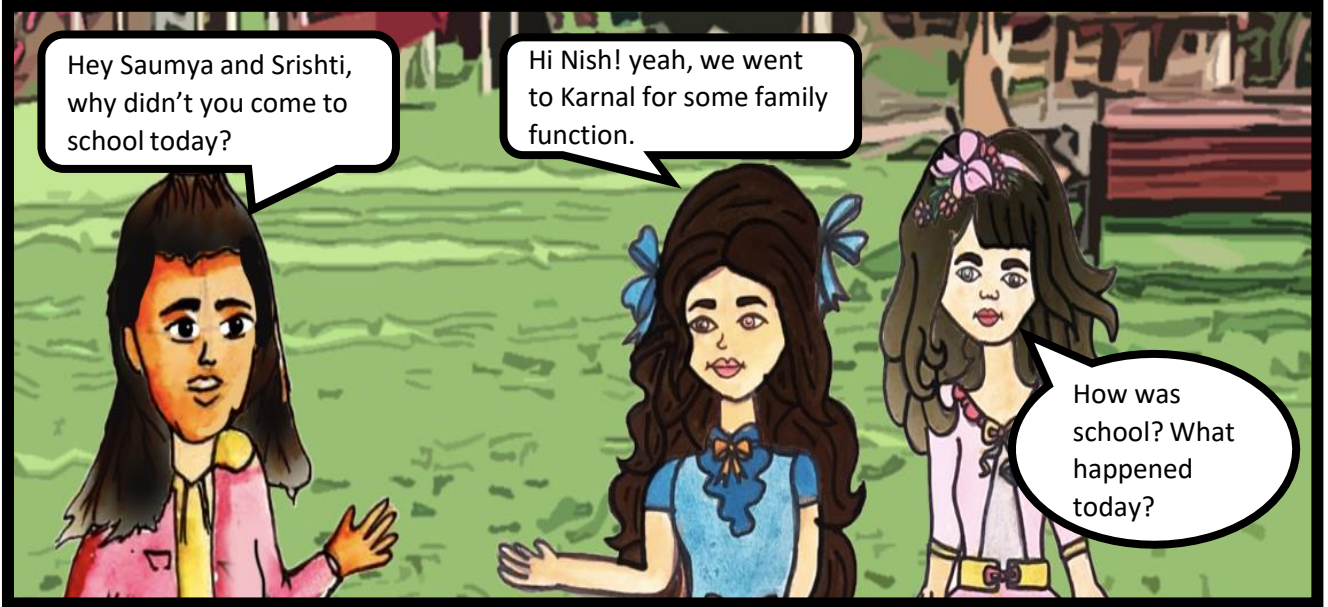
NIMISH



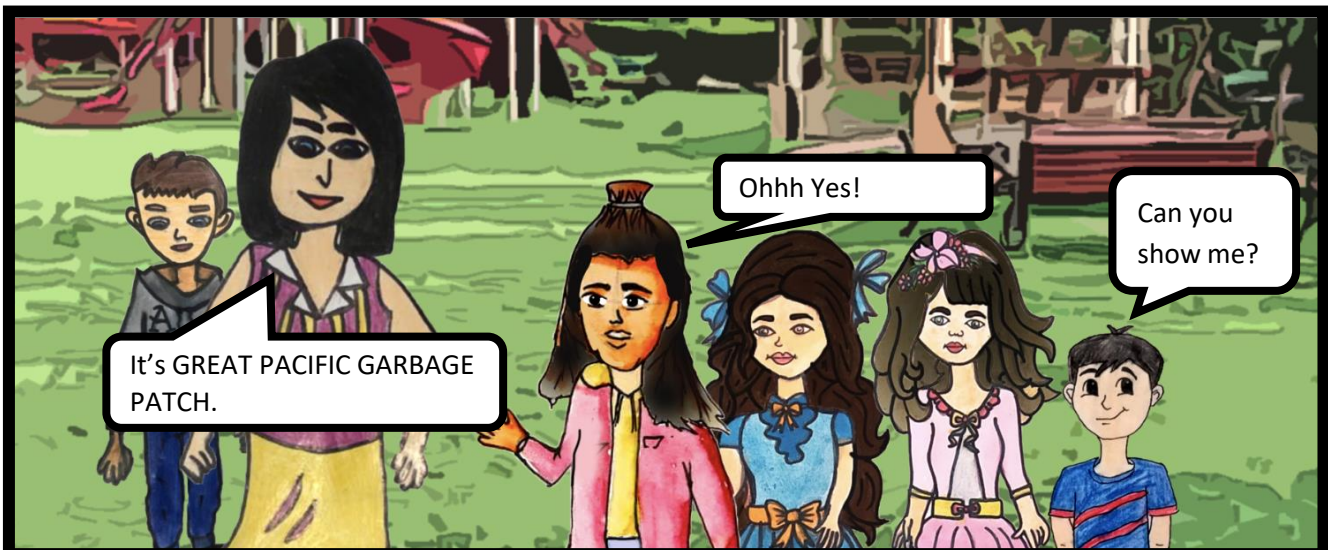
TINTIN

SCENE 1 – HANGING OUT

It's evening time and kids of Nirmal Housing Society (NHS) have gathered for playing.



Kamakshi and Gaurang were listening to their conversation and joined them.



Gaurang takes out his phone and types something on Google search. Everyone is peeping into the phone.



Hearing the loud chatter, Nimish gets curious and joins the group.





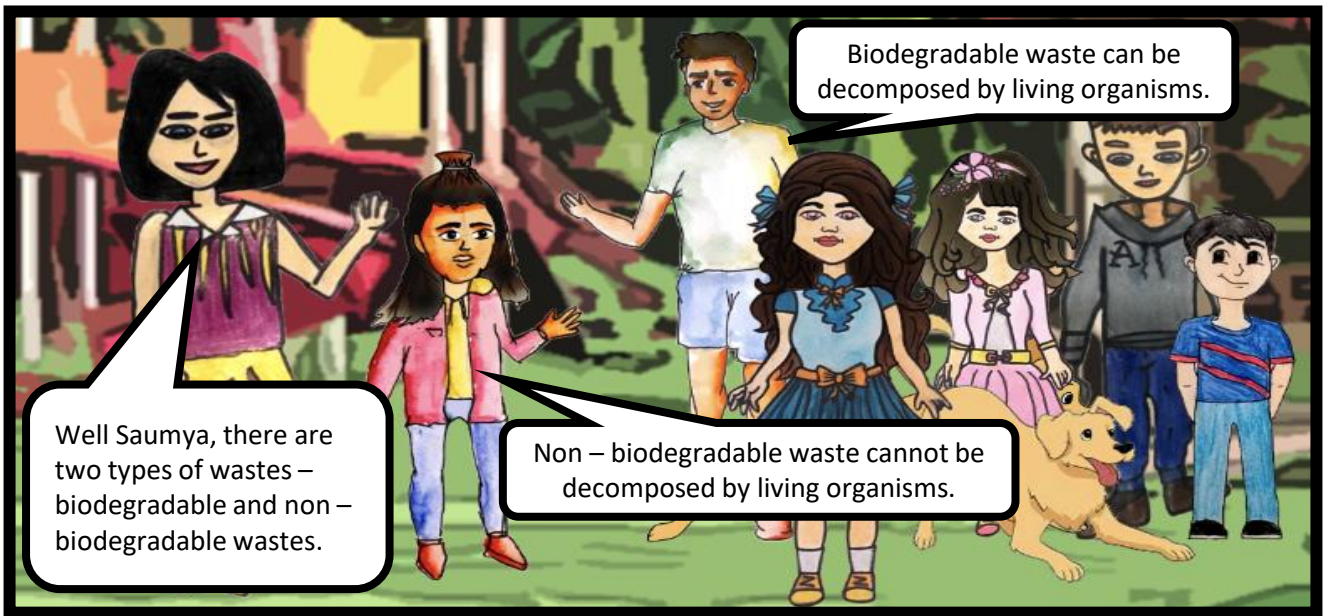
Tejas and Tintin to a particular spot in the park. Tejas starts to dig. Rest also run and follow them.



SCENE 2 – DIGGING IT OUT

All the children go to the other side of the Park.





Absolutely right, Tejas. You are learning fast.

So Tejas, promise us that now onwards you will not litter the park.

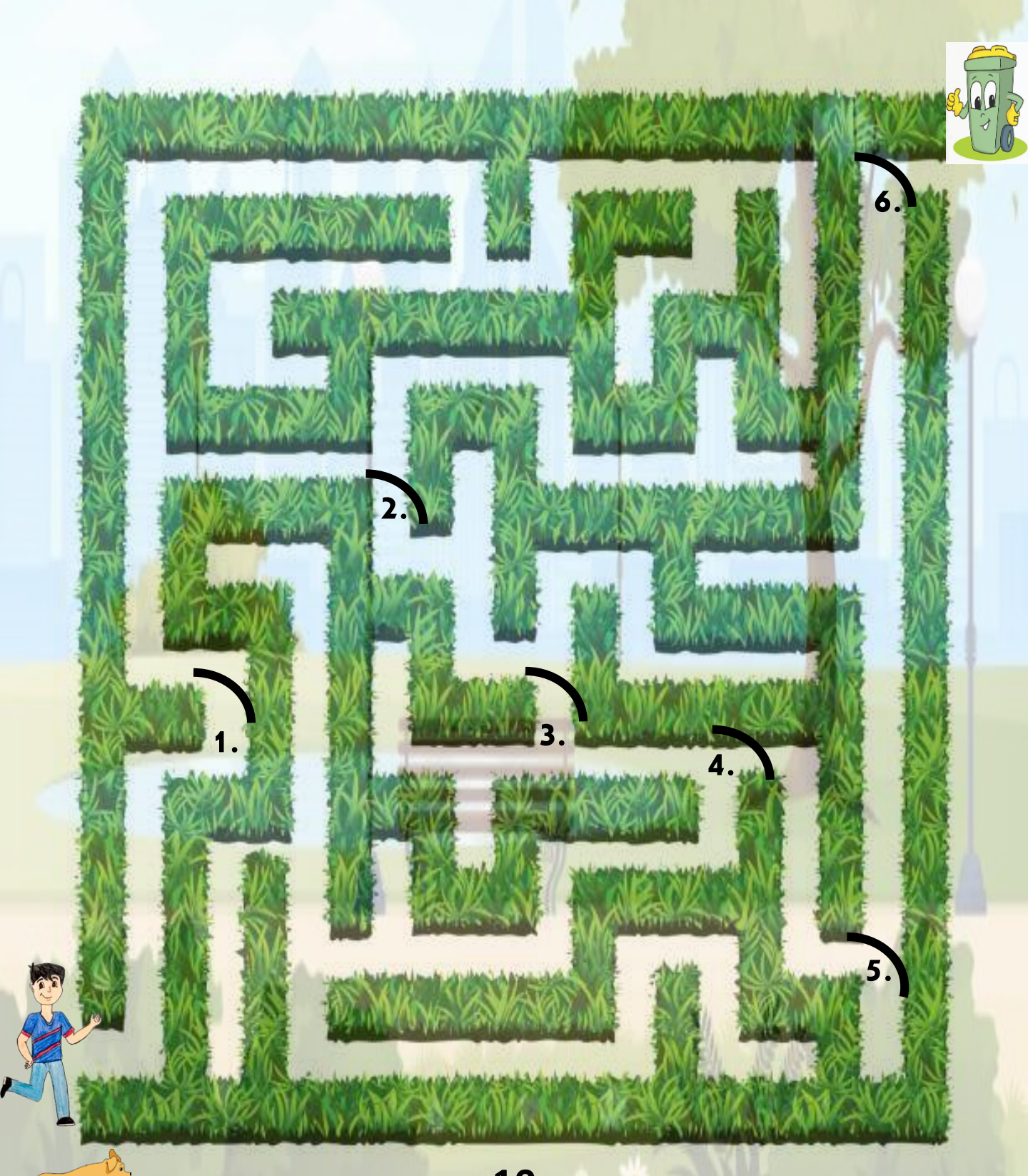
Everyone should pledge that we won't litter. Otherwise, you all know what will happen.

Right! NHSGP means Nirmal Housing Society Garbage Patch.

Then it will lead to NHSGP.

All of them laugh and bid good bye and promise to meet the next day at 5 in the evening.

Tejas and Tintin are looking for Mr. Bino to throw toffee wrappers but they have lost their way. Help them in finding their way to Mr. Bino.



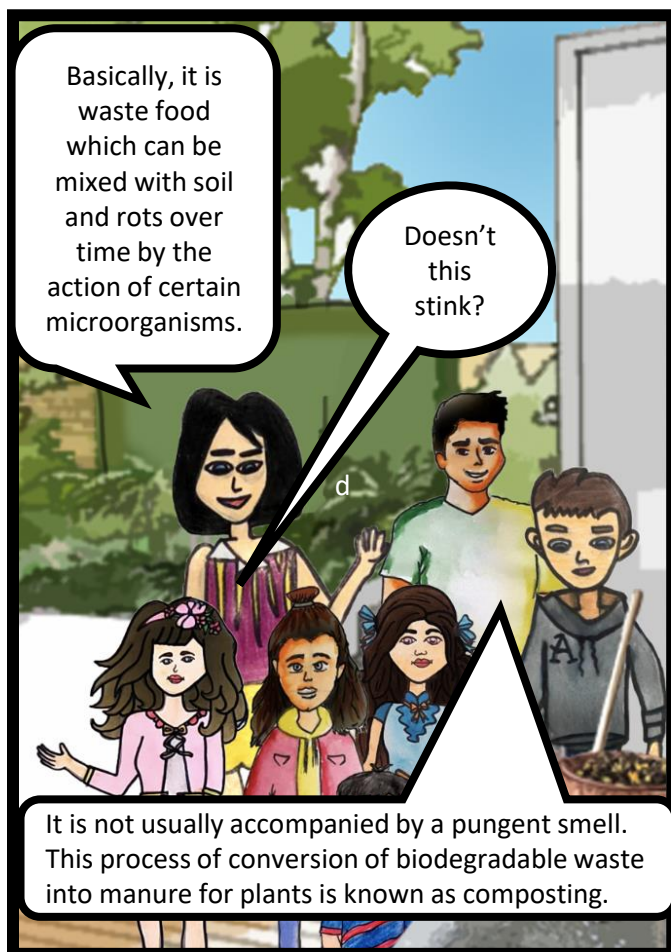
FINDING BINO

Here are the clues to reach to Mr. Bino.

1. A type of waste which can be decomposed by living organisms -
2. Sources of waste are -
3. Broken mobile will be put in category of -
4. Non - biodegradable waste is -
5. Full form of GPGP -
6. A way to recycle biodegradable waste-

SCENE 3 – AN EVENING ON TERRACE

Next evening everyone goes to Nimish's house to see how he is utilizing the domestic waste.



Tejas moves forward and peeps inside one of the big pots and sees some worms crawling and gets frightened.





No, no, we can't give spicy food or acidic food to them. Other microorganisms will also grow and harm them.

Friends, I have sent you one link where you can observe the procedure of vermicomposting.

Click on the link to see the complete process of vermicomposting.

<https://youtu.be/SUCVPkvRdRw>



Thanks a lot friends for sharing all this. We have understood it much better now.



Yeah, but still there is one more thing I would like to know. Where does all the garbage go?



Let's ask the garbage man tomorrow morning.

Okay then, see you in the morning at our society gate.

FUN TIME WITH GIGO

Gaurang has designed a game named GIGO, which is an acronym for GARBAGE IN, GARBAGE OUT.

GIGO is a term used in computers and is based on the fact $\text{INPUT} = \text{OUTPUT}$.

Positive Input = Positive Output

Negative Input = Negative Output

During the conversation of kids about GPGP, Gaurang got this idea of finding out more acronyms.

So, you now know the following:

GPGP – Great Pacific Garbage Patch

GIGO – Garbage In, Garbage Out

Here are few more for you to explore and find out

- **WWTP –**
- **UNEP –**
- **HHW –**
- **RWM –**
- **PAYT –**
- **LDPE –**

SCENE 4 – A TALK TO REMEMBER

In the morning, Nishtha, Srishti and Saumya are waiting at the Gate No. 6 of Nirmal Housing Society with their garbage packets.

NIRMAL HOUSING SOCIETY GATE NO. 6

Give me the packet. Is it kitchen waste or other waste like glass or metal?

Can you see two different dustbins here? One is blue and other is green.

Bhaiya, what is the purpose of having two coloured bins?

Bhaiya, how does it matter?

Ok. Thank you for letting us know about this. I will also segregate waste before disposing.

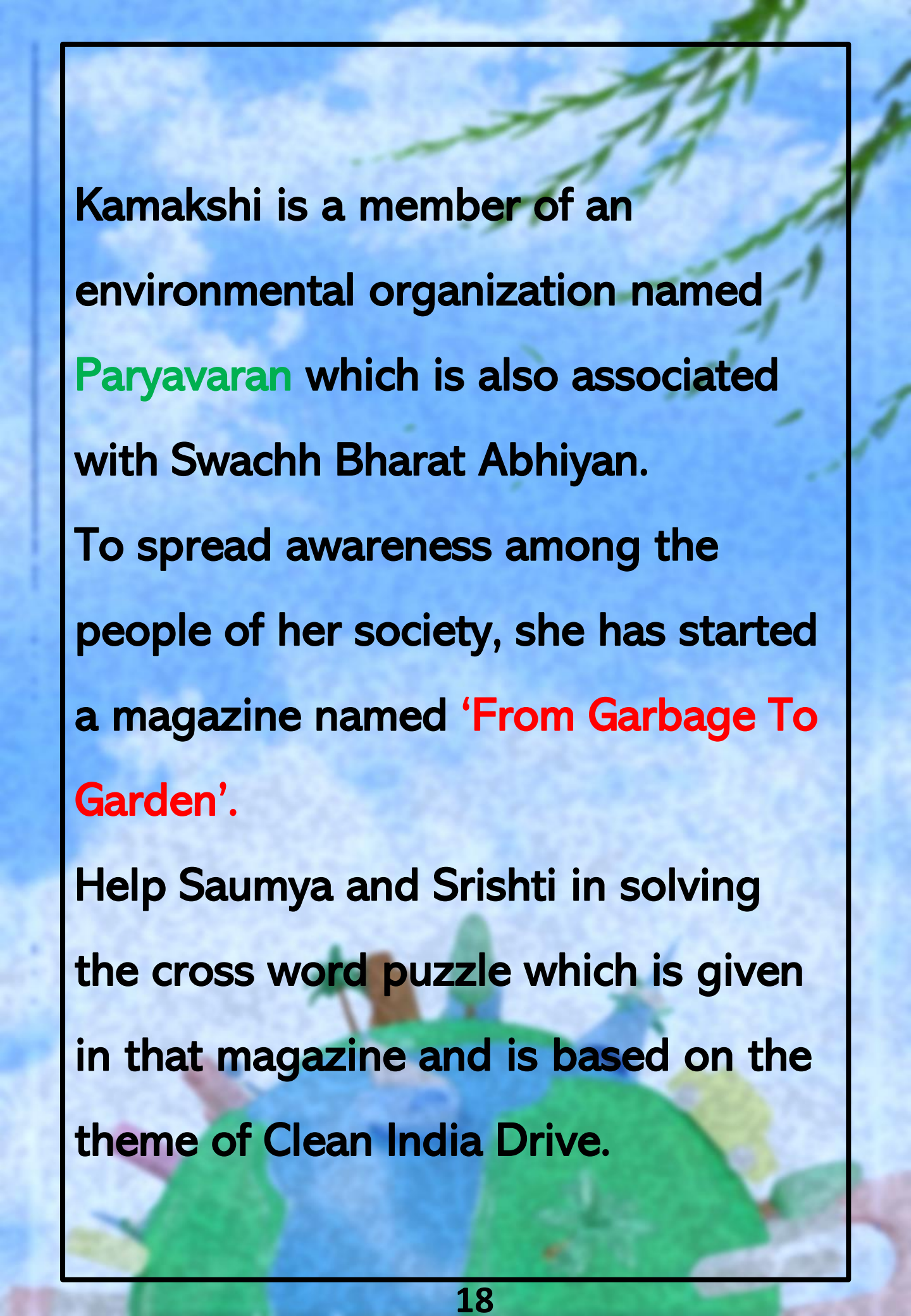
Bhaiya, please tell us, where do you dump this garbage?

Two different dustbins are used to segregate waste. Green is for kitchen waste and blue is for glass, metal, plastic, etc. which can be recycled.

It will go to dumping ground which is called Landfill.

Okay!

Thank you bhaiya, we will explore more about it.

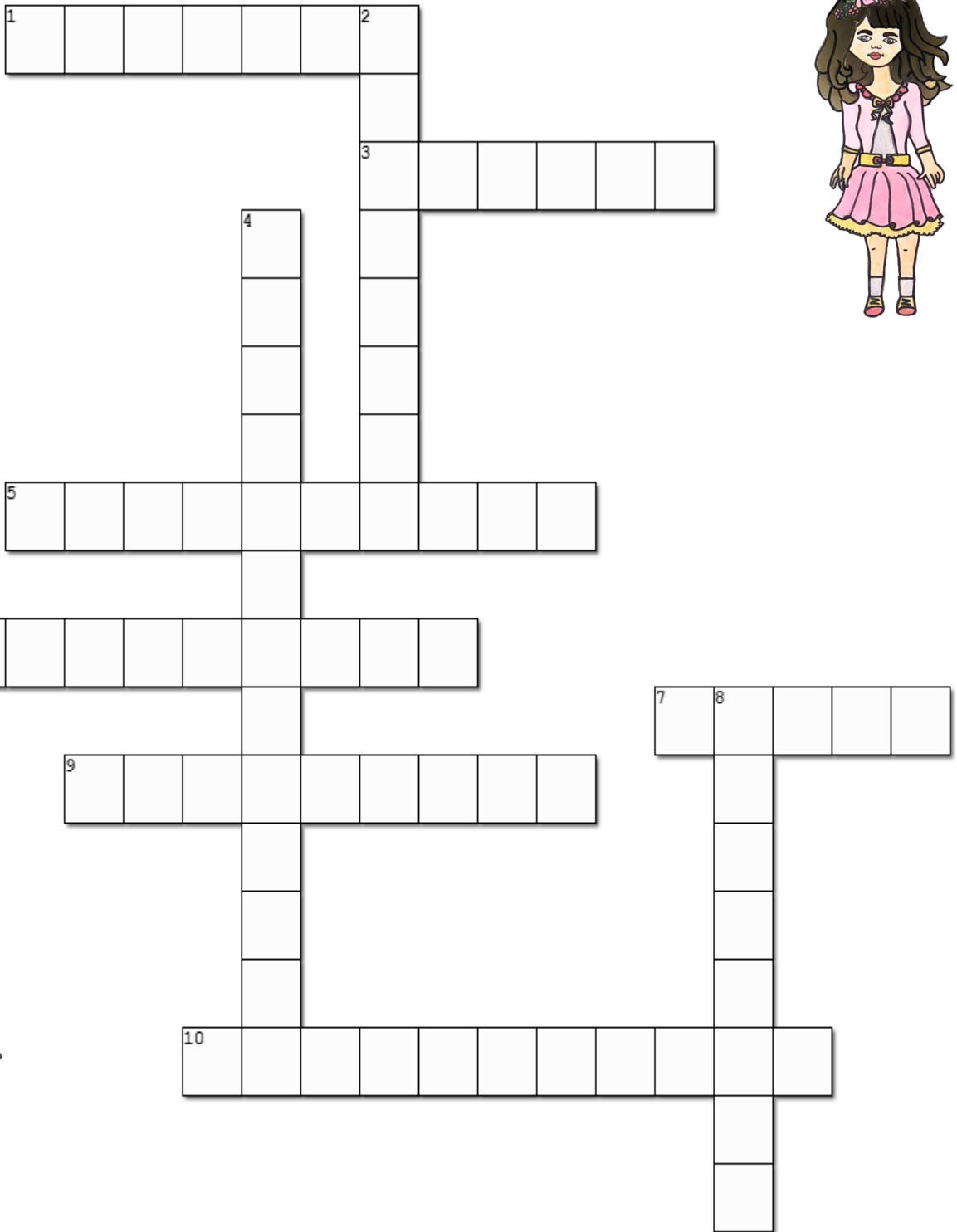


Kamakshi is a member of an environmental organization named **Paryavaran** which is also associated with Swachh Bharat Abhiyan.

To spread awareness among the people of her society, she has started a magazine named '**From Garbage To Garden**'.

Help Saumya and Srishti in solving the cross word puzzle which is given in that magazine and is based on the theme of Clean India Drive.

CROSSWORD TIME



Across

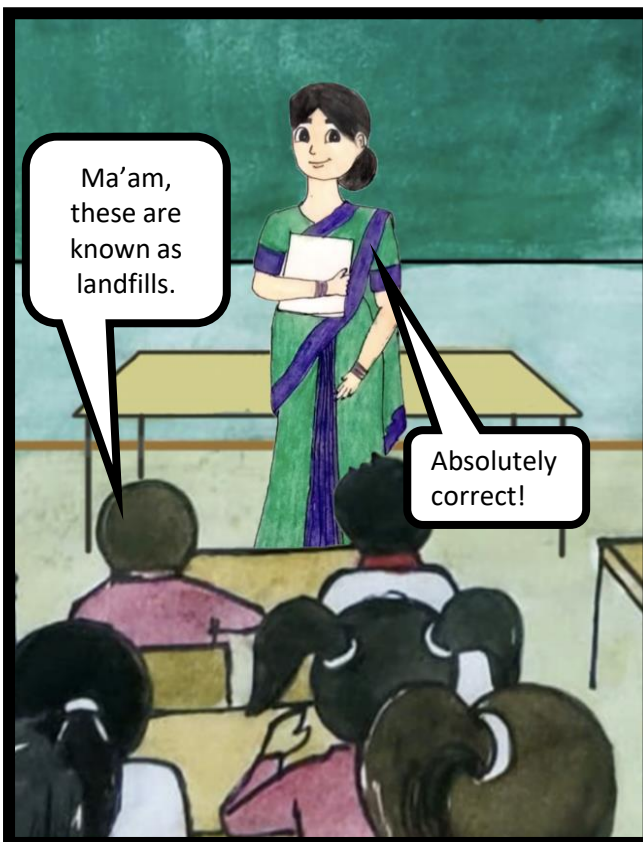
1. A kind of an organ used to grind food by special kind of earthworms
3. Dead plant and animal wastes mix with soil and produce
5. Waste generated from offices
6. Waste generated from factories, chimney, textiles, etc.
7. Bins used for disposing vegetable and fruit peels, dried leaves, left over food, etc.
9. Large low lying areas used for waste disposal
10. Tiny organisms that degrade the waste material

Down

2. Household waste
4. Wastes rot by action of microorganisms present in soil
8. Special type of earthworms used in vermicomposting

SCENE 5 – THE CLEAN, GREEN, RECYCLING MACHINE

On Monday Bhumika Ma'am enters the classroom and everyone wishes her Good morning.



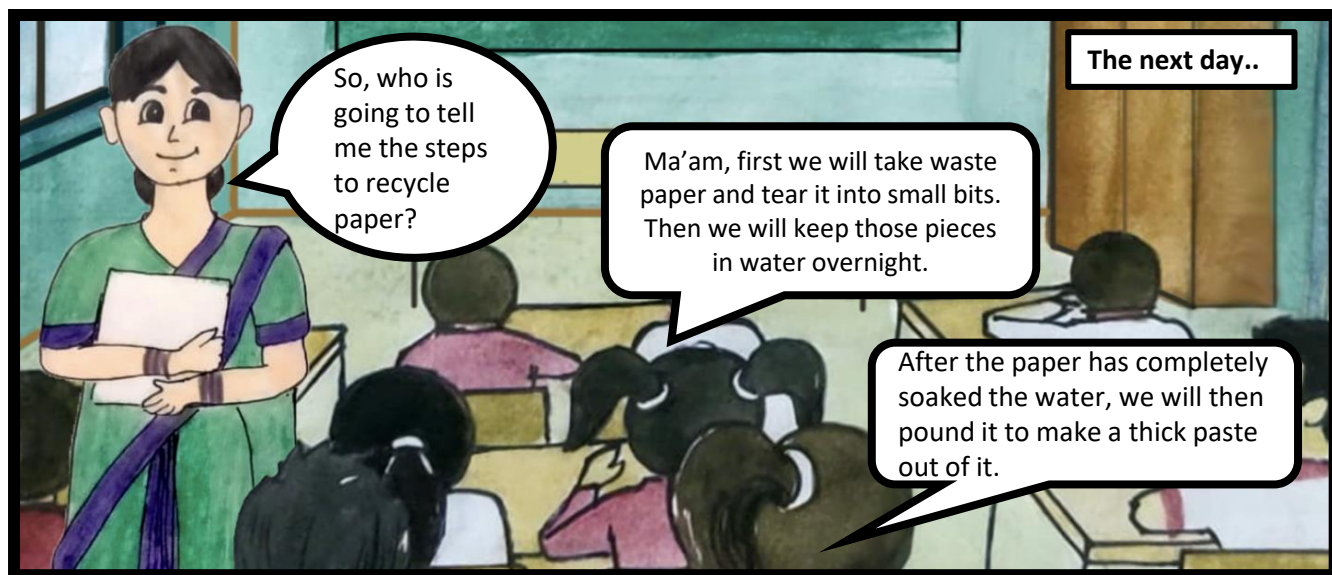
Nishtha tears a pin-page from one of her notebooks.

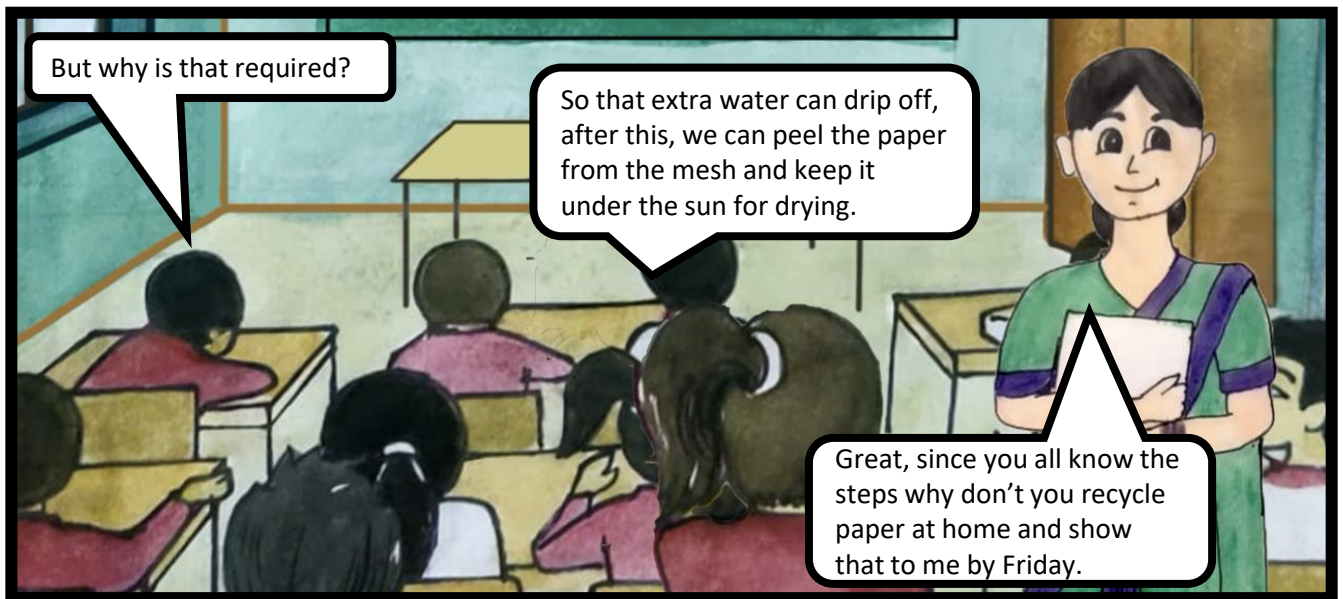




Click on the link to see the complete process of Recycling of Paper.

<https://youtu.be/DdLHWcedCF8>





On Friday, everyone showed their recycled papers to Bhumika ma'am and they were all appreciated.

Increase your knowledge with 4R Principle

REFUSE

What you don't need.
Say no to single-use of anything.
THINK REUSABLE .



REDUCE

What you need.
Choose products with less packaging
and in bulk when possible.



REUSE

Anything that you can.
Invest in items that can be used more than
once.



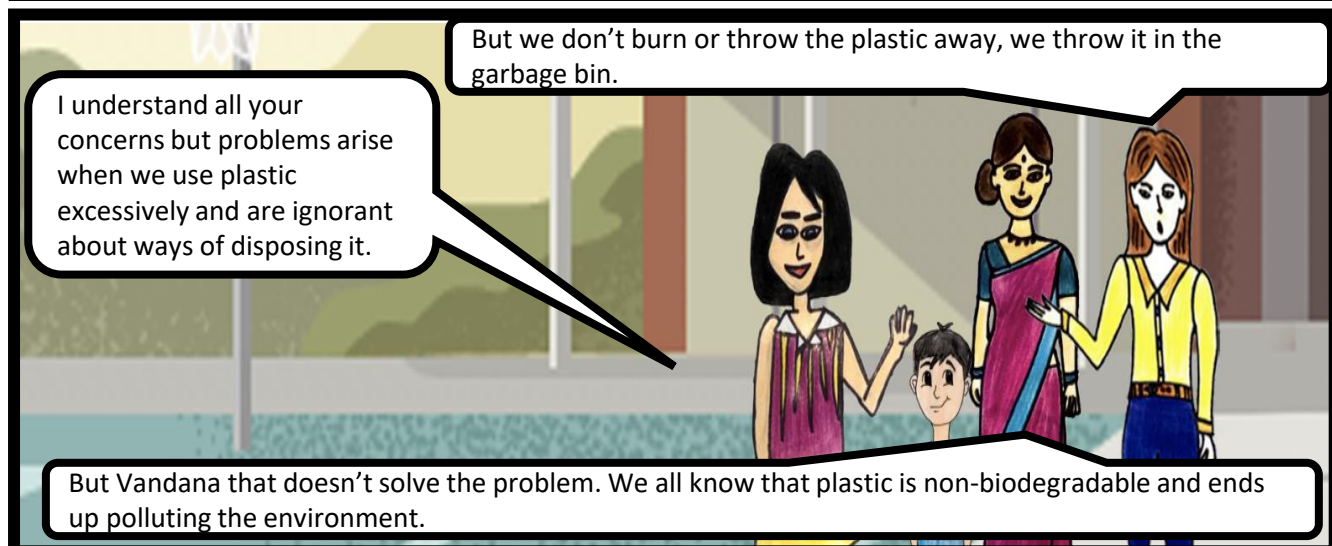
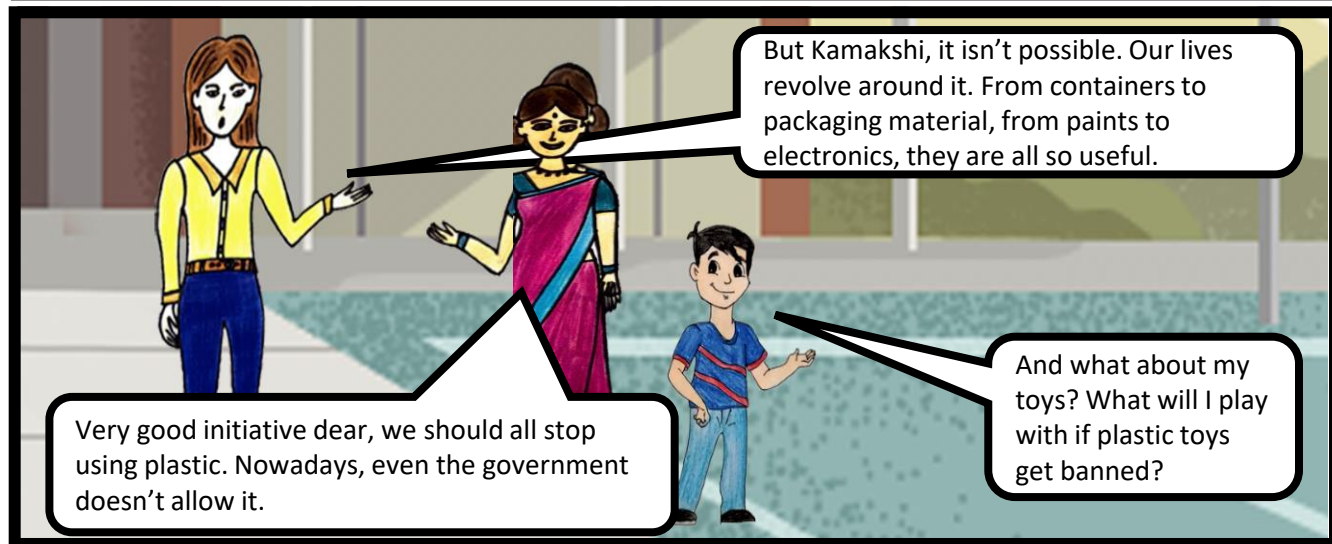
RECYCLE

What you cannot refuse, reduce, or reuse.
Remember recyclables should be
EMPTY, CLEAN and DRY.



SCENE 6 – DRIVE TO CLEAN INDIA

In Nirmal Housing Society, Kamakshi informs people about the launch of Clean India Drive on the upcoming Sunday during which she would urge everybody not to use plastic.





Saumya, you are forgetting that plastic is recyclable.

Yes Srishti, you got that right. Plastic buyers buy plastic from the trash pickers and recycle it. In this manner, we can avoid the production of new plastic and can reuse it.



Well, you can download it from the play store and enter your credentials. The app will ask you for the address and your identity proof.

So, how will the app work?

What is the use of address, bhaiya?



After adding address, the app will automatically detect the local plastic buyers of that area along with the specifications and types of plastic they buy. You can sell the plastic to them and earn money.

Wow Gaurang! Now that is some solution we all have been looking for.

SCENE 7 – A TRIP TO UN-WASTE

On the day of trip, in the bus..



In the Indraprastha Park..



In the Waste to Wonder Park..

Students, you can see all the seven wonders of the world here. This park is very unique and special in its own way.

Ma'am, we have been here earlier and the speciality is that all of these monuments are made from industrial scrap.

Very good Saumya! In this manner, the scrap and the waste products can be reused productively.

So everybody, have you enjoyed this educational trip?

Yes ma'am, a lot!

So what have we learnt from the trip?

We should be more considerate and responsible towards the environment.

4R Rule should be practised to reduce the amount of garbage generated and limit the use of plastic.

To, Future detectives

To: Future detectives
From : Garbage Control Headquarters

CASE HISTORY : Five days ago a bag full of trash was spotted near the sidewalk. The bag consisted of waste from paper recycling process, fruit waste, some leftover food from a party, paint cans and an old handkerchief with a letter 'A'.
'Amaltik' a resident of the colony was spotted hanging around in the premises by 'Ramnika' (another resident of the colony). 'Ramnika' accused 'Amaltik' of the wrong-doing while 'Ramnika' herself was seen parking her car in the same area by 'Arshit'.

TASK : Collect the clues by answering the questions to identify the offender.

What is Required : Pencil and paper

TASK : Collect the offender.

Materials Required : Pencil and paper

FOR CLUES ANSWER THE FOLLOWING QUESTIONS

Look at the picture given below and identify the biodegradable materials.



Unscramble the following words using the clues provided.



SGARS: If you leave it on the ground instead of bagging it and throwing it away, it can actually make your lawn greener and healthier.

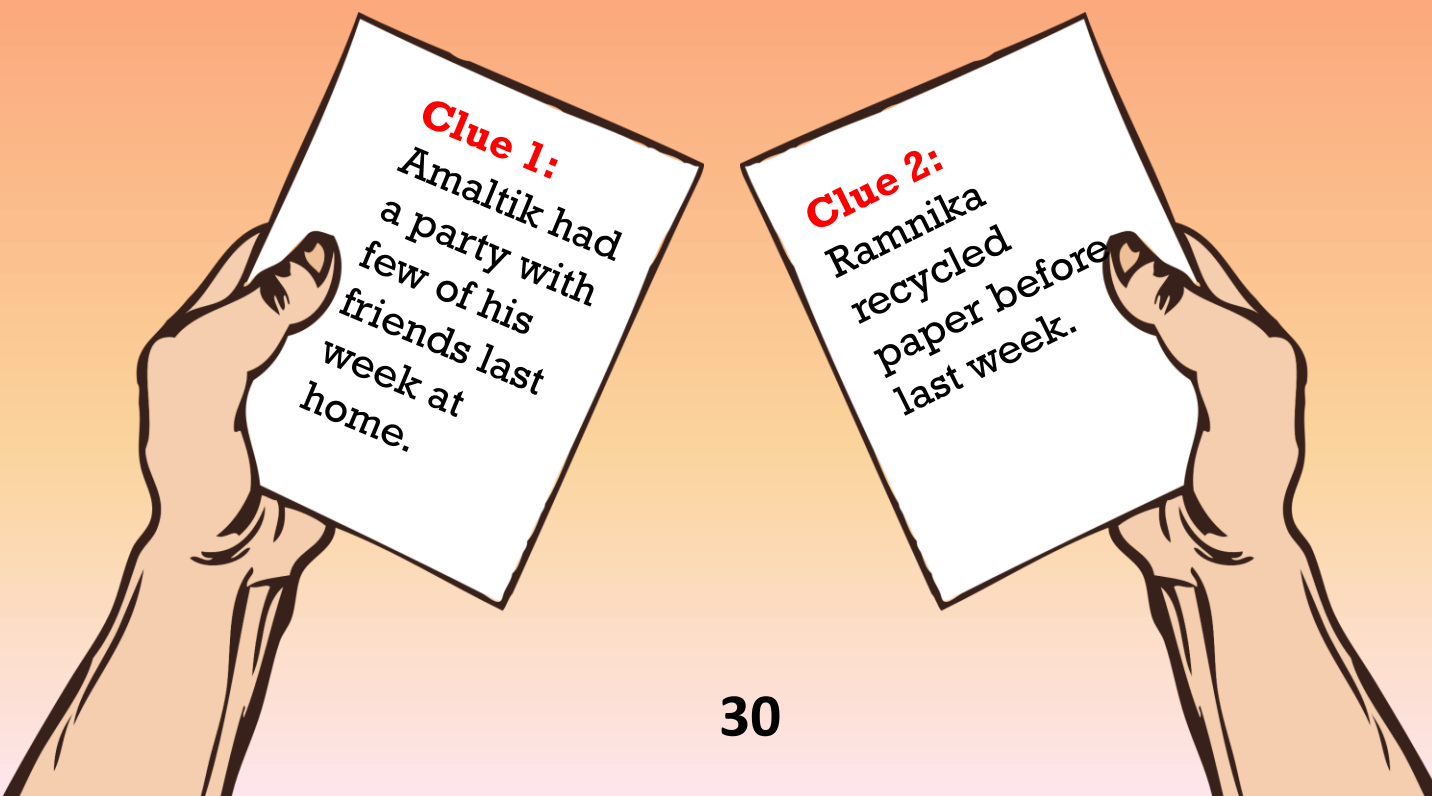
DOASTTLBOE: This plastic product can be grounded up into small pieces and made into soft fabric used in sweaters, jackets, long johns, and gloves.

RPPAE: Many different kinds can be recycled from your parents' offices and your home.

SHCIRA: These and other pieces of furniture can be given to someone else if you don't want them anymore.

TSELCOH: When you are through with them, you can tear them up into rags for cleaning, use them for play, or even make a quilt.

Check your answers from the answer key and collect your clues if all the answers are correct.



Decode these top secret codes to get the final clue

TOP SECRET



A=I	E=Z	K=C	Q=A
B=Q	F=G	L=Y	R=M
C=V	G=J	M=T	S=H
H=X	N=P	T=B	Z=R
I=U	O=D	U=O	D=K
J=F	P=W	V=S	W=L
X=E	Y=N		

- Don't PQVMX JUUO by taking more than you will XQM.
- Use ZXIVQTWX NWQMXV and KINV at picnics.
- ZXIVX bags instead of MSZUPAYF them QPQL.
- VSQZX your old RQFQEAYXV with friends.
- Try to buy items that are ZXKLKWQTWX in your KURRIYAML.
- TIL NZUOIKMV that are made with ZXKLKW XO materials.
- Learn about different types of KURNUVMAYF.

Check your answers from the answer key and collect the final clue

Clue 3:
Ramnika's
house was
freshly
painted

FIND THE
NAME OF THE
CONVICT IN
THE ANSWER
KEY

ANSWER KEY

FINDING BINO

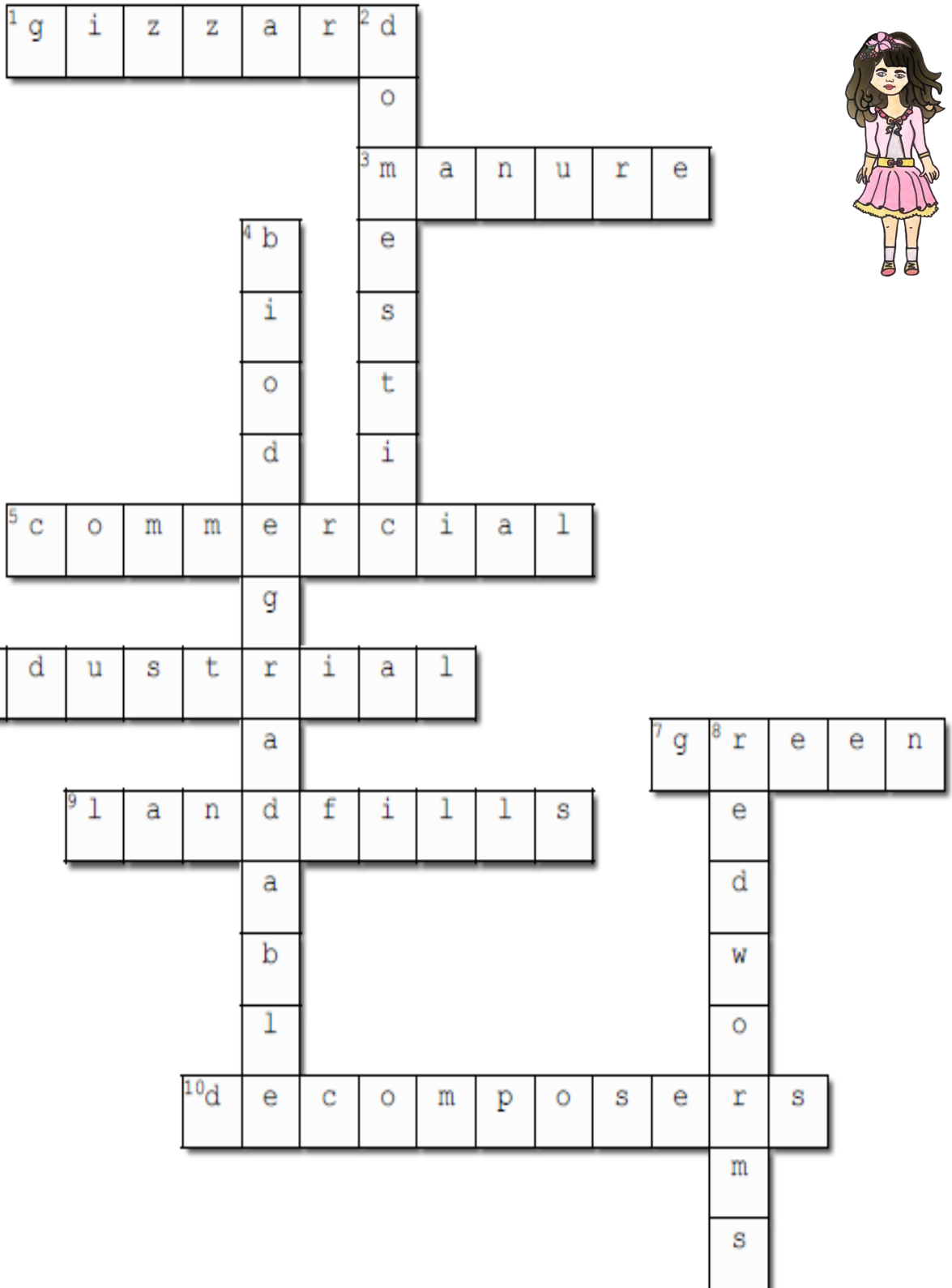
1. **Biodegradable Waste**
2. **Domestic, Industrial, Agricultural, Commercial**
3. **E-waste**
4. **A waste which can't be degraded by living organisms.**
5. **Great Pacific Garbage Patch**
6. **Composting**

ANSWER KEY

FUN TIME WITH GIGO

- **WWTP – Waste Water Treatment Plant**
- **UNEP – United Nations Environment Program**
- **HHW – Hazardous Household Waste**
- **RWM – Radioactive Waste Management**
- **PAYT – Pay As You Throw**
- **LDPE – Low Density Poly Ethylene**

CROSSWORD TIME



ANSWER KEYS



- **Identifying the biodegradable waste**

Paper , Organic waste

- **Unscramble the words using the clues**

Grass , soda bottles , paper , chairs , clothes , bags

- **Decoding the Top-secret codes**

- 1.) Don't waste food by taking more than you will eat.
- 2.) Use reusable plates and cups at picnics.
- 3.) Reuse bags instead of throwing them away.
- 4.) Share your old magazines with friends.
- 5.) Try to buy items that are recyclable in your community.
- 6.) Buy products that are made with recycled materials.
- 7.) Learn about different types of composting.

- **Identifying the convict**

Convict – Ramnika

In the trash bag Recyclable items and paint was found and Ramnika had a small recycling unit as well as her house was freshly painted.

GLOSSARY

- **Garbage:** Garbage is defined as the materials that need to be disposed off because they no longer serve any purpose for us or are of no use to us.
- **Degrade:** To break down or deteriorate chemically.
- **Biodegradable waste:** The waste which can be degraded by the action of micro-organisms.
- **Non – Biodegradable waste:** The waste which cannot be degraded by the action of micro – organisms.
- **Landfill:** Landfill is an area where the garbage collected from a city or town, is dumped. The area is later converted into a park.
- **Manure:** Waste from plants like dry leaves and from animals like cow dung.
- **Composting:** Converting plant and animal wastes including that from kitchen, into manure, is called composting.
- **Vermicomposting:** The method of making compost from kitchen garbage using redworms is called vermicomposting.
- **Gizzard:** A thick-walled muscular pouch below the stomach in many birds and reptiles for grinding food.
- **4R Rule:** Reduce, Reuse, Recycle and Refuse

BIBLIOGRAPHY

NCERT TEXTBOOK STD VI

<https://ncert.nic.in/textbook.php?fesc1=16-16>

FROM THE PRINCIPAL'S DESK

Change is inevitable. The challenges faced by the entire world this year has led to innumerable opportunities specially in the area of learning. The entire education community, teachers, students and parents have reinvented themselves for a new learning order. The power of technology has resonated across families, schools, countries and the world. From cloud computing, breakout rooms, creating apps, machine learning and the internet of things have all come together to advance educational practices.

Teachers across CBSE schools have connected on a common platform of a graphic novel/comic - A step towards meta cognition and meta learning.

My deep appreciation for Mr. Sandeep Sethi (Director Education, M S M S II, Museum Trust) who has worked tirelessly to bring the teaching community together.

Ms. Anita Karwal (Secretary Education, Government of India is the shining light of education across the country. Her creativity, enthusiasm and love for innovation is unparalleled.

Mr. Manoj Ahuja, IAS, Chairman CBSE whose vision ignited this idea and inspired us to undertake this enriching experience.

My teachers of Springdales School, Pusa Road who are extremely innovative, have taken this initiative to a higher level of aesthetics and engagement and brought out a remarkable and creative tool of learning.

Dr. Ameeta Mulla Wattal
(Principal, Springdales School, Pusa Road)

SUMMARY

The best way of dealing with waste, both economically and environmentally, is to avoid creating it in the first place.

The story is an attempt to highlight the ways to reduce the amount of waste produced. It revolves around some children residing in 'Nirmal Housing Society' and their engagement in daily life activities by which they plan to bring awareness about effective garbage disposal and by practicing the 4R rule in their daily life.



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