



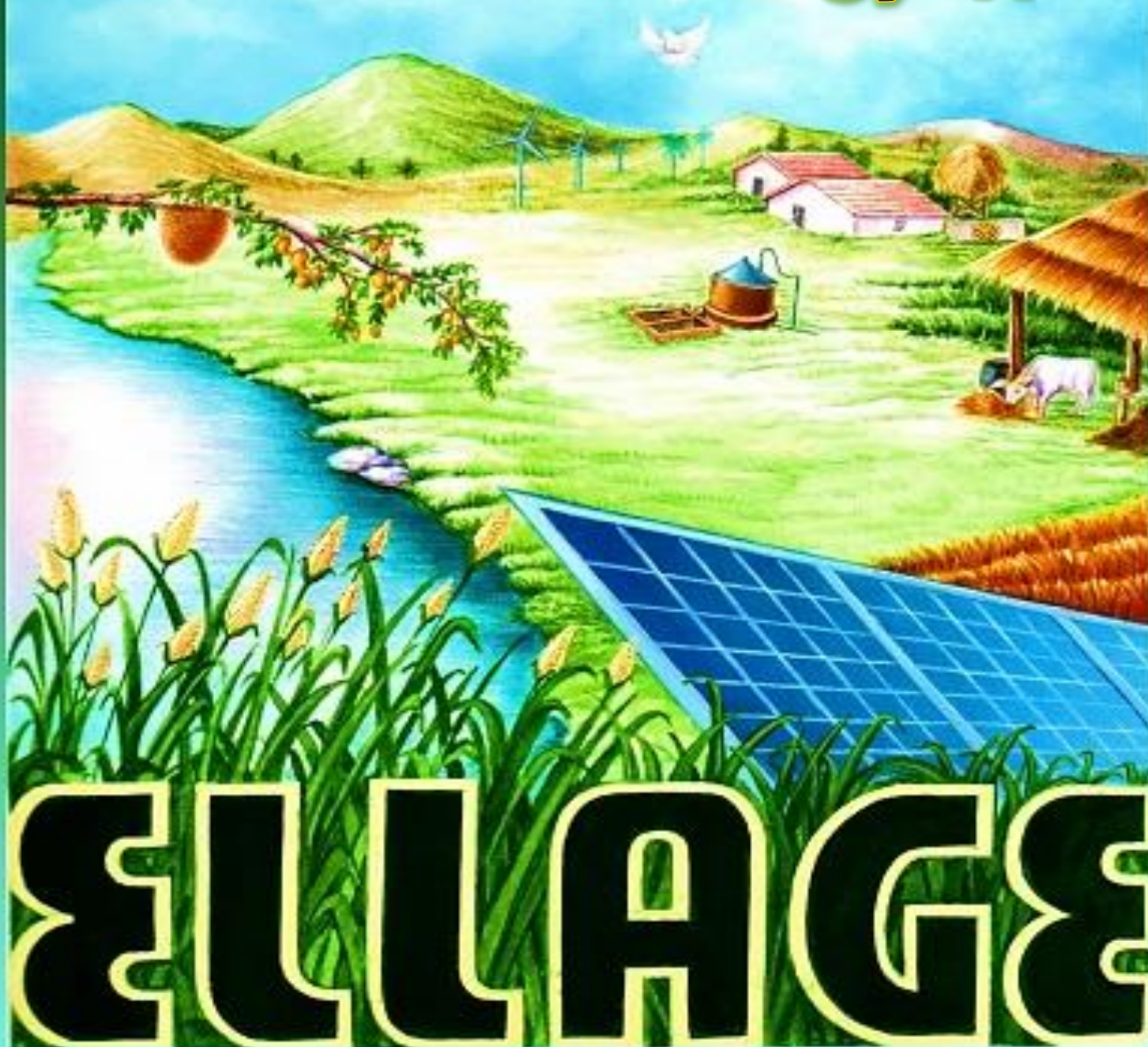
DELHI PUBLIC SCHOOL

KAMPTEE ROAD, NAGPUR

(Affiliated to C.B.S.E)

GRAPHIC NOVEL

Sources of Energy-X



ACKNOWLEDGEMENT

Together we all can do great things with great love, together we can create fun even while we engage in the process of learning and do something as wonderful as this interesting Graphic Novel.

Development Team

Advisory Committee:

Ms Tulika Kedia, President
Ms Savita Jaiswal, Director
Ms. Ritu Sharma, Principal
Mr. Sandeep Sethi, Director Education
(MSMS II, Museum Trust)

Overall Coordinator:

Ms. Kalyani Guha
Mr. O.Sonamani Khuman

Concept:(Science Department)

Ms. Namrata Ruprela

Script:(English Department)

Ms. Yogeeta Umalkar
Ms. Malabika Mitra

Backdrops & Cover:

(Art Department)

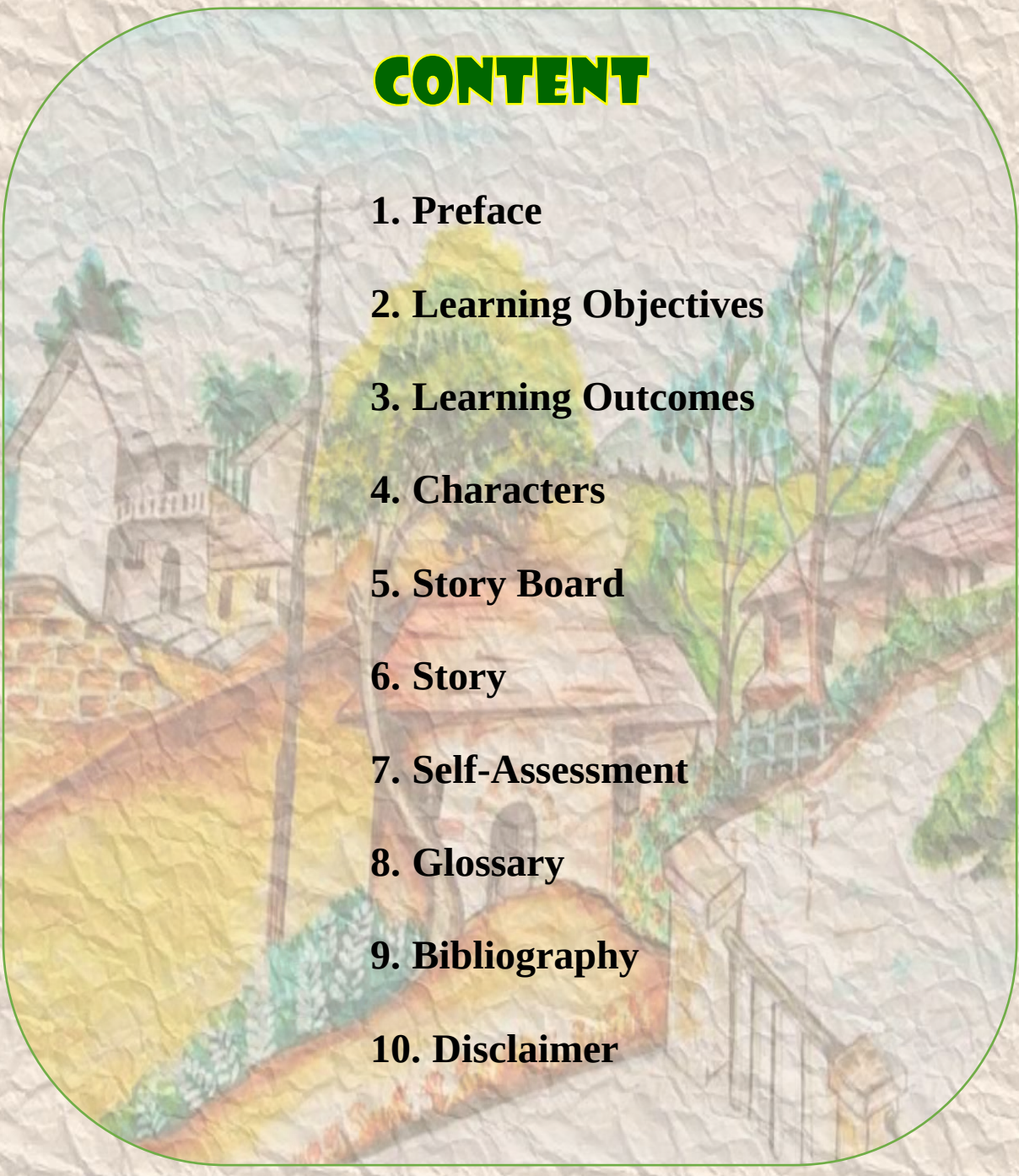
Mr. Rohit Maheshkar
Ms. Monali Bawankar
Ms. Chandika Nag

Compilation:(IT Department)

Ms. Savita Sharma
Ms. Deepika Bharadwaj
Mr. Vivek Dubey

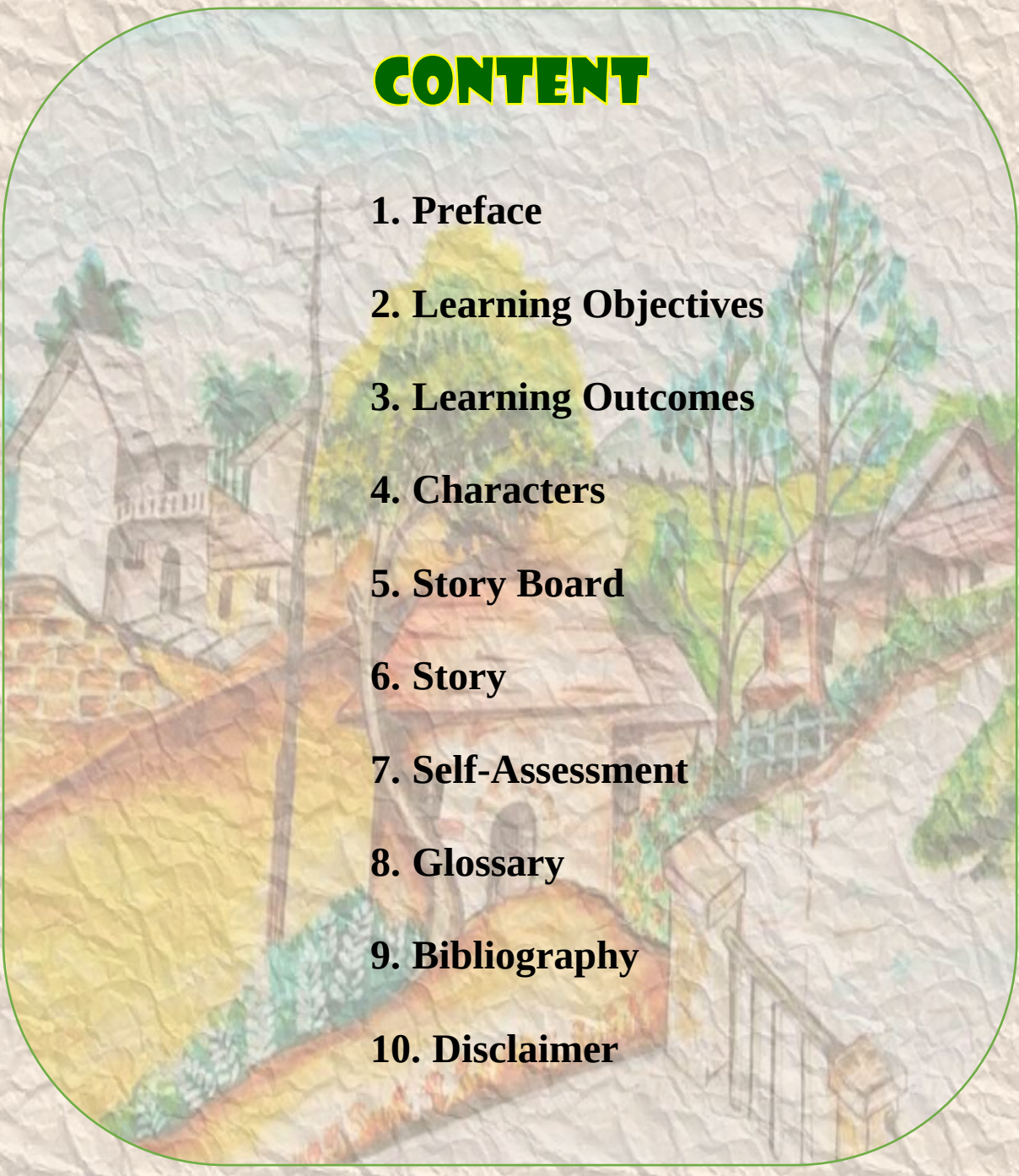
Academic Support:

Dr. Brijbhushan Upadhyay



CONTENT

- 1. Preface**
- 2. Learning Objectives**
- 3. Learning Outcomes**
- 4. Characters**
- 5. Story Board**
- 6. Story**
- 7. Self-Assessment**
- 8. Glossary**
- 9. Bibliography**
- 10. Disclaimer**

- 
- # **CONTENT**
- 1. Preface**
 - 2. Learning Objectives**
 - 3. Learning Outcomes**
 - 4. Characters**
 - 5. Story Board**
 - 6. Story**
 - 7. Self-Assessment**
 - 8. Glossary**
 - 9. Bibliography**
 - 10. Disclaimer**

PREFACE

This realistic innovation is a resolute attempt to explicate the concept of employing natural resources for sustainable development and illustrating the interdependence of the elements in the ecosystem. In the making of this manuscript, science has been made to abide to the maxim 'erudition without burden', and in presenting science as a live and growing body of knowledge with many open areas of investigation, rather than as a complete artefact.

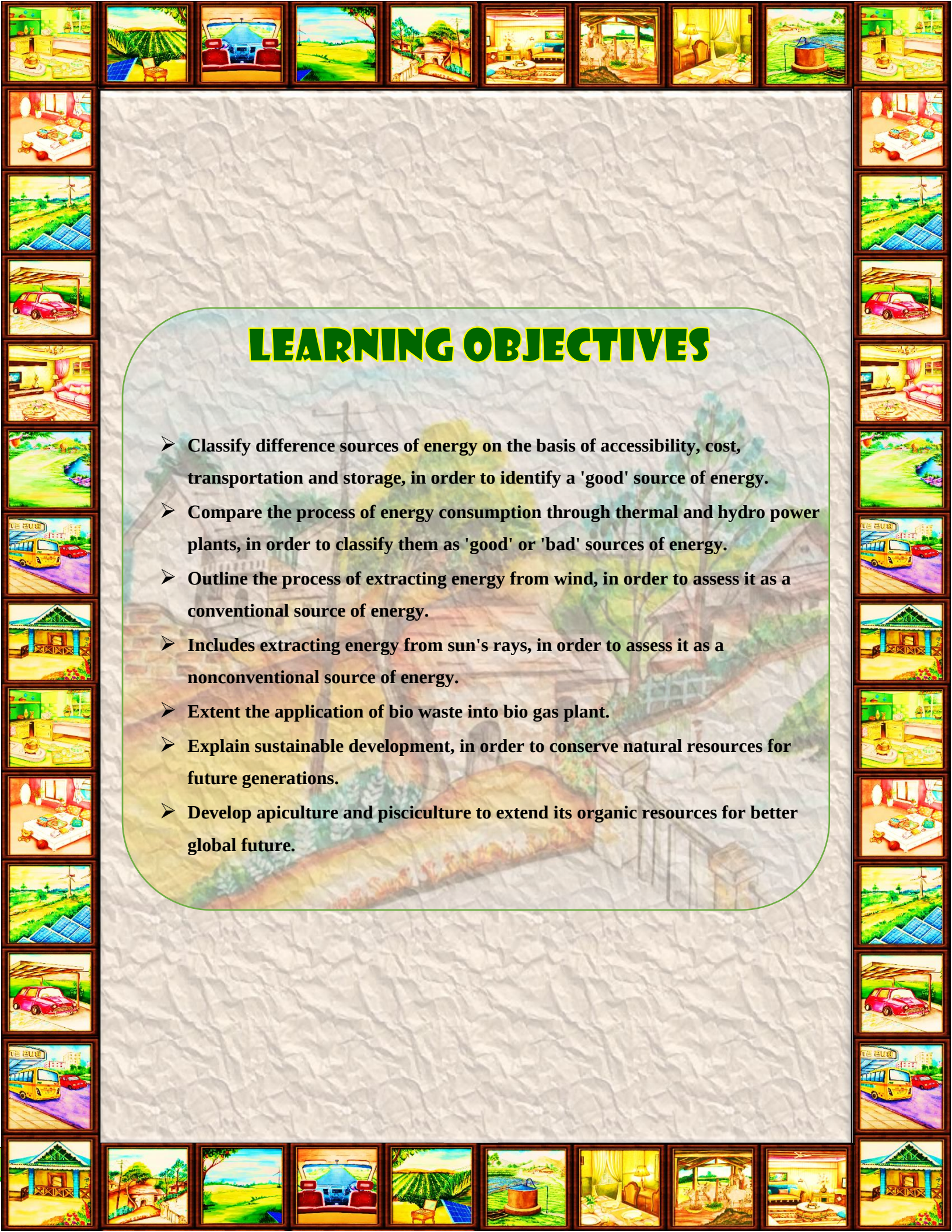
The novel also advocates a pedagogy that is hands- on and investigation centered. The experiences, due to their immediacy and realism, can be directly related to the characters in the story.

The novel is an effort to explain the pond ecosystem and its multiple products, the cattle firm with a biogas plant attached to an organic farm, the hybrid power plant (wind energy and solar energy utilization), the waste management system etc. in an unpretentious way. The story is an optimum mix of practical learning and hypothetical learning for children living in urban areas. The names of the characters are:

Father (Mr. Prakash Dixit), Mother (Mrs. Jyoti Dixit), Two Children (Pawan Dixit and Purva Dixit) Uncle (Mr. Ravi Joshi), Aunt (Mrs. Shashi Joshi), Cousin (Dhruv Joshi) and helpers/farmers, village people, animals.

The bibliophile is taken on an exploratory ride with twists and turns, learning all about our environment and its utilization of resources. By the end of the novel the readers gain not only knowledge about the natural resources but also interesting facts about sustainable development behaviour.

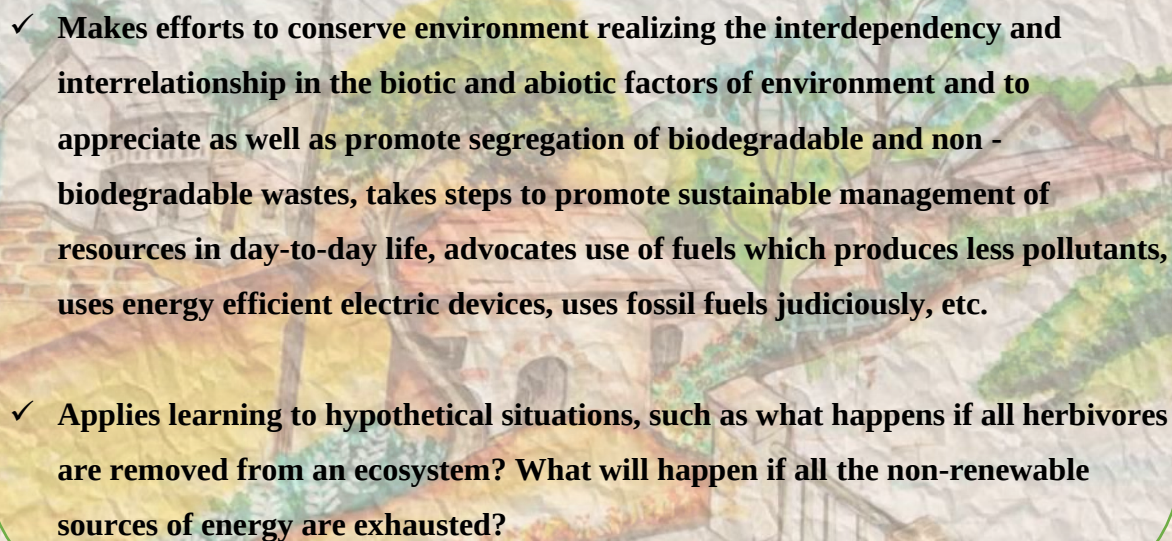
Every exertion has been made to keep this book free from inaccuracy. As there is always opportunity for improvement, any suggestion will be appreciatively acknowledged.



LEARNING OBJECTIVES

- Classify different sources of energy on the basis of accessibility, cost, transportation and storage, in order to identify a 'good' source of energy.
- Compare the process of energy consumption through thermal and hydro power plants, in order to classify them as 'good' or 'bad' sources of energy.
- Outline the process of extracting energy from wind, in order to assess it as a conventional source of energy.
- Includes extracting energy from sun's rays, in order to assess it as a nonconventional source of energy.
- Extend the application of bio waste into bio gas plant.
- Explain sustainable development, in order to conserve natural resources for future generations.
- Develop apiculture and pisciculture to extend its organic resources for better global future.

- ✓ **Makes efforts to conserve environment realizing the interdependency and interrelationship in the biotic and abiotic factors of environment and to appreciate as well as promote segregation of biodegradable and non - biodegradable wastes, takes steps to promote sustainable management of resources in day-to-day life, advocates use of fuels which produces less pollutants, uses energy efficient electric devices, uses fossil fuels judiciously, etc.**
- ✓ **Applies learning to hypothetical situations, such as what happens if all herbivores are removed from an ecosystem? What will happen if all the non-renewable sources of energy are exhausted?**

- 
- ✓ **Makes efforts to conserve environment realizing the interdependency and interrelationship in the biotic and abiotic factors of environment and to appreciate as well as promote segregation of biodegradable and non - biodegradable wastes, takes steps to promote sustainable management of resources in day-to-day life, advocates use of fuels which produces less pollutants, uses energy efficient electric devices, uses fossil fuels judiciously, etc.**
 - ✓ **Applies learning to hypothetical situations, such as what happens if all herbivores are removed from an ecosystem? What will happen if all the non-renewable sources of energy are exhausted?**

CHARACTERS

scene 67

Urban Family

Prakash Dixit



Jyoti Dixit



Pawan Dixit



Purva Dixit



Ellage Family

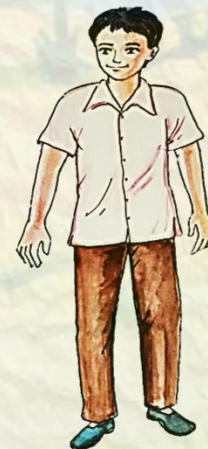
Uncle Ravi Joshi



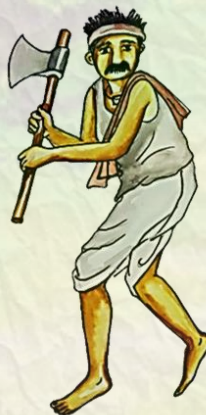
Aunty Shashi Joshi



Dhruv Joshi



Farmers



STORY BOARD

Map of
the Ellage

Reaching the
system place -
Ellage

A pond with aquatic plants/ animals /organisms where natural cleaning of water is taken place also self process of rain water harvesting, domestic uses + pisciculture. The boundary of the pond will be planted with fruits/medicinal plants /vegetables/flowers (to collect nectar for bees) and apiculture.

Dairy farm for economical and commercial aspects, a biogas plant beside the cattle farm and slurry left will be used as organic manure for farming within the campus/system.

Mini hybrid power plant (solar panel set, wind mill set), water works (filtration) , sanitation, incineration and domestic waste management plan (biodegradable and non biodegradable)

Interior of the house: bio pest control systems, well ventilated, safety measures and emergency exit and service contacts.
Availability of updated informative gadgets

Healthy lunch prepare form organic products

All this above ladder will be converted in to dialogue and comic images appropriate to the characters in the story.

END OF THE FICTION

Mr. Prakash Dixit, a bank manager, who lives in a 3 BHK flat, at Nagpur, has a very happy family with a beautiful wife Jyoti and two children Pawan and Purva. Pawan, son of Mr. Prakash, is 15 years of age and Purva the chirpy daughter is 13. Jyoti, who is a house wife, is a homely lady adorned with Indian Culture.



2

On Friday evening while coming home from school...



That night at the dinner table....

Pawan, how did you do in the test on ecology?

Not very good Papa!

Did I ask you Purva, Yes Pawan, did you face any problem with the test?

Yes Papa. I got confused while answering the questions on Conservation of ecology.

Tomorrow after school, let us visit Ravi, my brother who lives in Lodikheda Village .

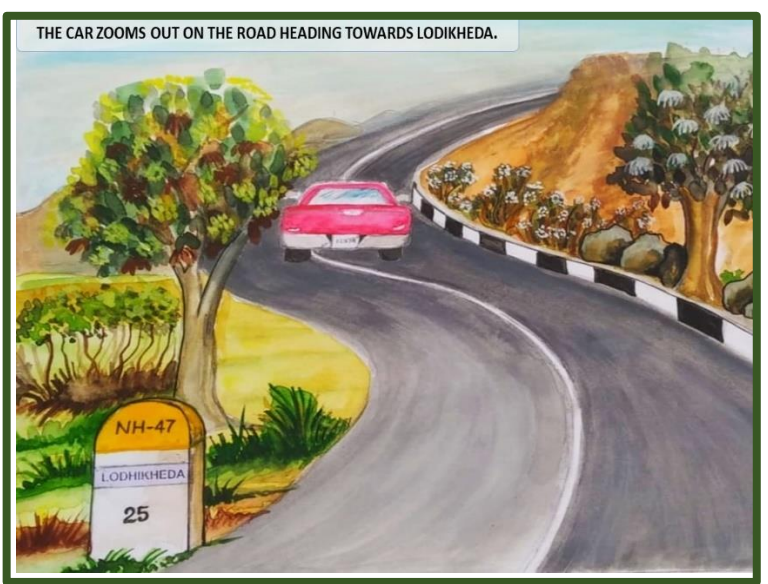
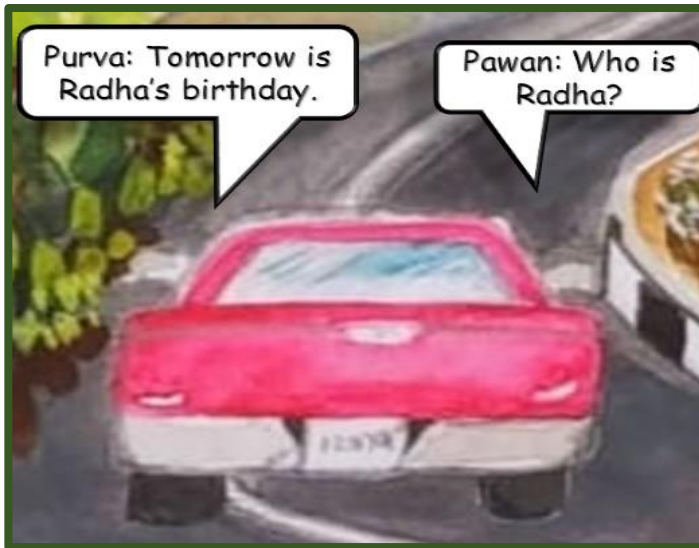
It's a nice idea. We have not seen them for long ever since they returned from abroad.

They have returned from abroad and they are staying in a village?

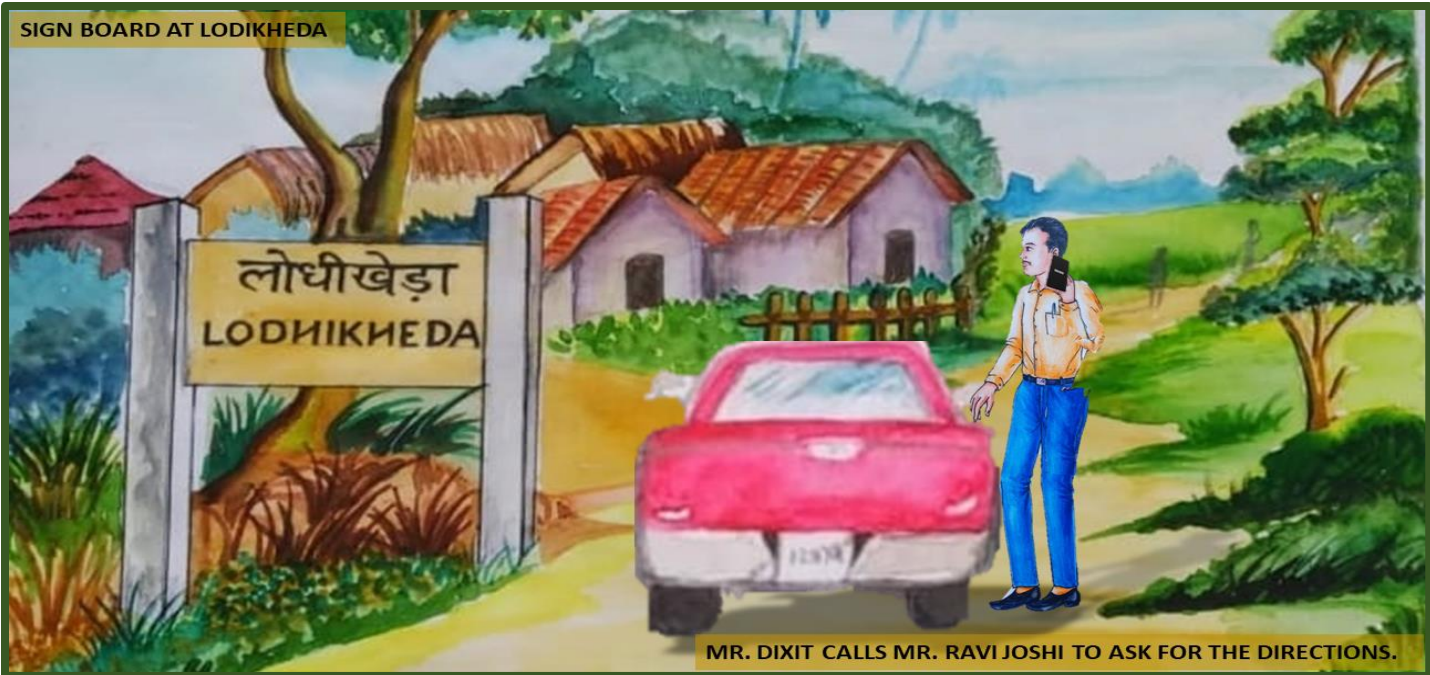
We only get one day to watch soccer and movie. We will not go to a dirty village.

Don't you think they are crazy! No Papa, we will not go to the village. I will miss my favourite cartoon shows.





SIGN BOARD AT LODIKHEDA



MR. DIXIT CALLS MR. RAVI JOSHI TO ASK FOR THE DIRECTIONS.

THE CAR ENTERS ELLAGE



Wow! Bhaiya see such a big farm. Look at the house, It's a cottage!



I am not impressed. It seems so dull and boring.

See there are lights also in the house.

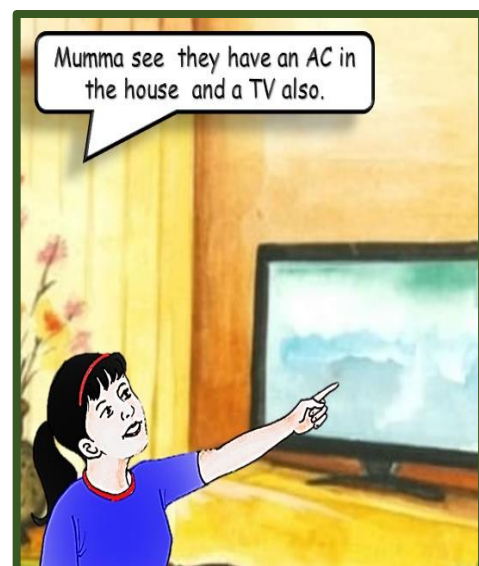


AUNT SHASHI , UNCLE RAVI and THEIR SON, DHRUV AGED 15 COME TO WELCOME THEM.



INSIDE THE HOUSE / INTERIORS





THE CHILDREN GO INSIDE THE HOUSE. DHRUV SWITCHES ON THE TV.

Your TV works in such a remote area.

Pawan, today we have the soccer match between Barcelona and Real Madrid.

Messi is my fav.

I like Ronaldo.

Hope there is no power cut at night. I doubt whether we'll have the net connectivity.

Don't worry dude, we have solar panels and uninterrupted internet. We'll have a gala time.

PAWAN & PURVA LOOK BEWILDERED AT EACH OTHER.

Children, it's 8 pm time for dinner. Come to the dining hall.

Why so early aunty? At home we have dinner at 10 pm.



The men and children enjoy the lavish and sumptuous dinner comprising of Dal, Chapati, Rice, fresh Veggies, fried fish and egg curry.





After dinner the family gathers at the living room. The elders chit chat while the children enjoy the soccer match. They go to sleep in their rooms at 10:30 pm.



The entire family wakes up hearing the chirping of the birds, mooing of the cows, bleating of the goats.



Aunt Shashi was in the kitchen making tea and breakfast. Uncle Ravi was practicing Yoga exercises in the garden



Pawan & Purva along with their parents sit to have their breakfast.



Tea Time

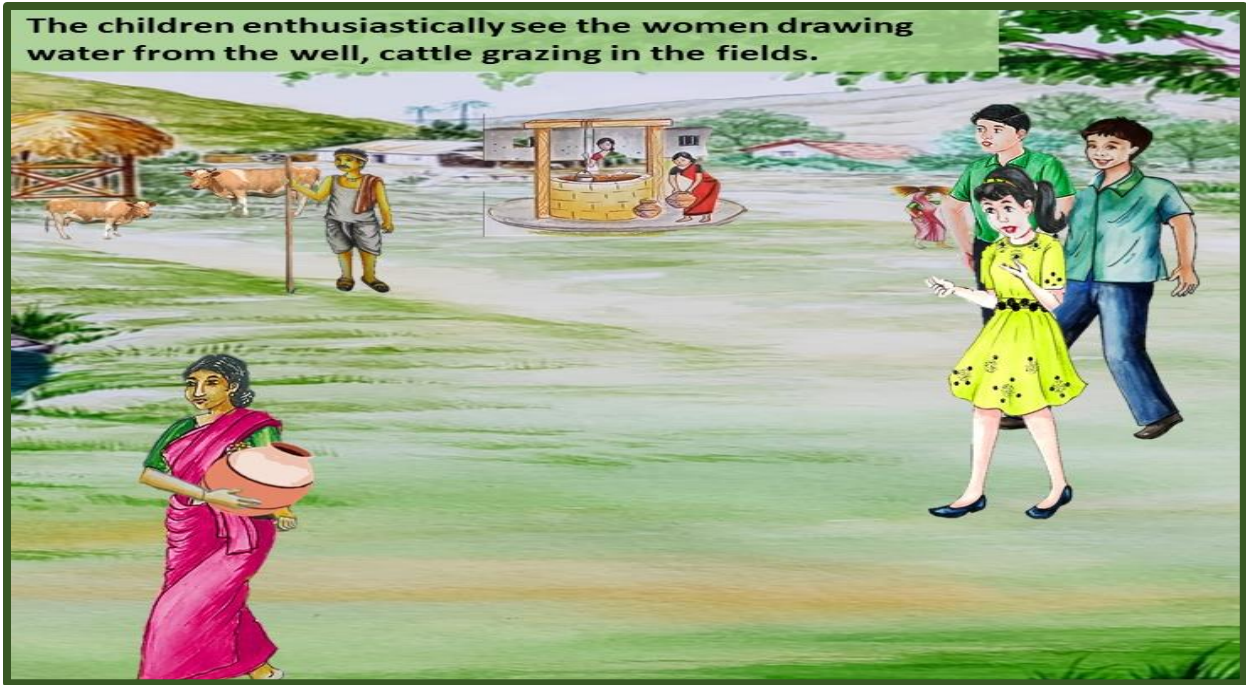
Aunt Shashi serves the entire family hot piping milk, tea along with homemade biscuits.



Brunch Time



The children enthusiastically see the women drawing water from the well, cattle grazing in the fields.



The Ellage has an elaborate water management system which helps in irrigation and domestic purposes.

See Pawan, this is the pond from where you devoured the fish the previous night.



Bhaiya look. There are so many fishes in the pond. Dhruv Bhaiya, Do you feed them with fish food like we give our fish in the aquarium?



No Purva. The fish feed on the insects, worms and algae as the part of the pond ecosystem.

Uncle Ravi, what is a pond ecosystem?



Pond ecosystem & its working

scene 67



A **pond ecosystem** is a community of organisms living together within a body of water that can be enclosed either artificially or naturally. A distinct community with its own ecology. But the world's pond ecosystems are being threatened by many factors. These include the drainage of wetlands for industrial purposes, pollution, urban sprawl and global warming which is changing the face of the planet and its weather patterns.

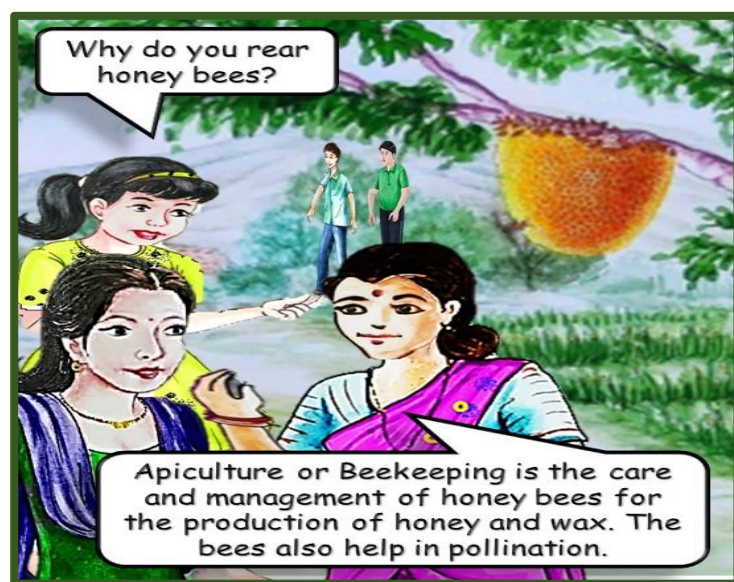
Pond ecosystem works in collaboration with the natural environment to provide everything necessary for the various plants and animal inhabitants to thrive. Fish consume plants like algae and other organic matters like insects and worms. Consumption by fish creates waste that sinks to the bottom, along with other debris such as decaying plant matter. These debris are then broken down by the beneficial bacteria and other microorganisms colonized on the rocks and gravel which spread over the bottom of the pond. Once broken down, these substances are absorbed as nutrition by the plants. The nourished plants continue to grow and act as food for the fish and the cycle continues.



- The breeding, rearing, and transplantation of fish by artificial means is called Pisciculture, in other words, fish farming.
- It is the principal form of aquaculture, while other methods may fall under Mariculture. It involves raising fish commercially in tanks or enclosures, usually for food.
- Pisciculture is also done in the Pond Ecosystem. This often integrates fish farming into the existing farm to create additional income and improve its water management.
- Fish growth in ponds can be controlled by the farmers themselves by selecting the fish species they wish to raise.

scene 67





Purva, Pawan and Dhruv run towards the cow shed to see Dhruv's favourite cow. Purva turns back to see whether her parents are following or not.



She sees Aunt Shashi plucking the leaves of some herbs and her parents standing near a grove of trees. She rushes back to join them.

Why did you wait here? Come fast.
They are milking the cows.



Purva, these are the aromatic plants and herbs used in herbal medicines and personal care products. This is the Shankhapushpi plant, the juice of which develops memory and boosts energy.

Are all these Shankhapushpi plants?



Jyoti there are many medicinal plants and herbs like Ateesh, Kutki, Kuth, kapikachhu, karanja which mean little to the urban consumer but are a big source of income for the farmers.

It's amazing to see the natural beauty of your Ellage. The urban dwellers will never know the originality of the herbal products. In city we use the processed products while here it is all unadulterated and farm fresh.



They all walk towards the cow shed. Purva holds her nose to ward off the peaty smell of the cow dung. Dhruv and Pawan are watching the milking of the cows.



Dhruv, do you come here daily?



No, baba visits here every day.

Ravi uncle, what do you do with all the cow dung?



It is used as organic manure for farming within the Ellage and is also supplied as biomass(slurry) for biogas plant.

Yes uncle Ravi, I have learnt about it in my science lesson. I want to see it. I will tell my friends about it when I meet them tomorrow.



Come I will show you.

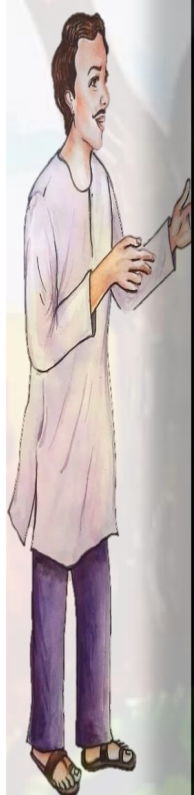
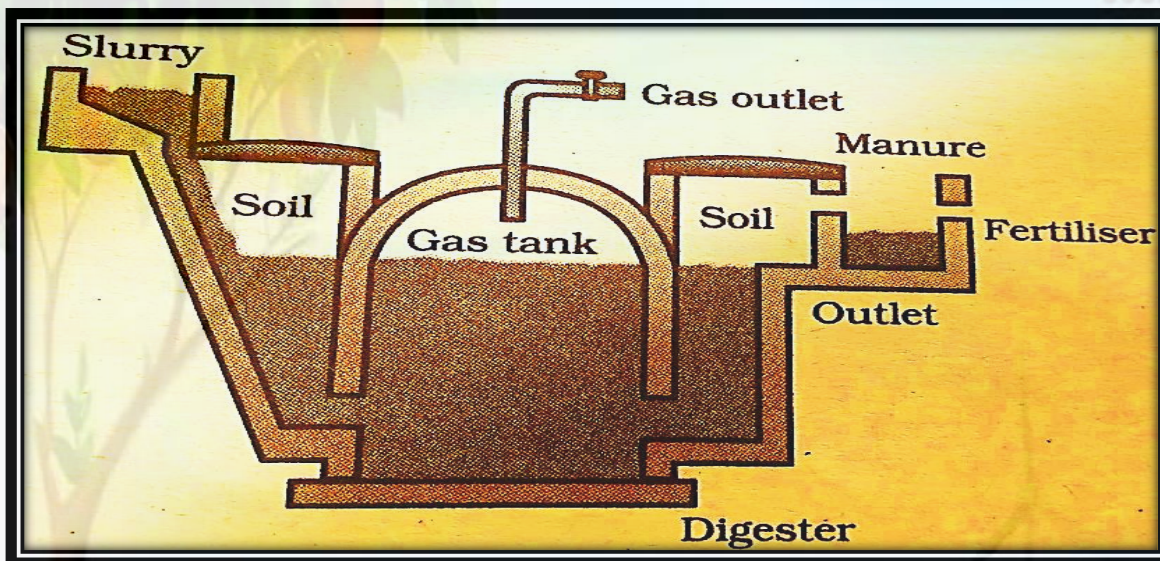
They all walk to the field to see the biogas plant.

Cow dung, it is popularly known as 'gobar-gas'.



Working of Bio-Gas plant

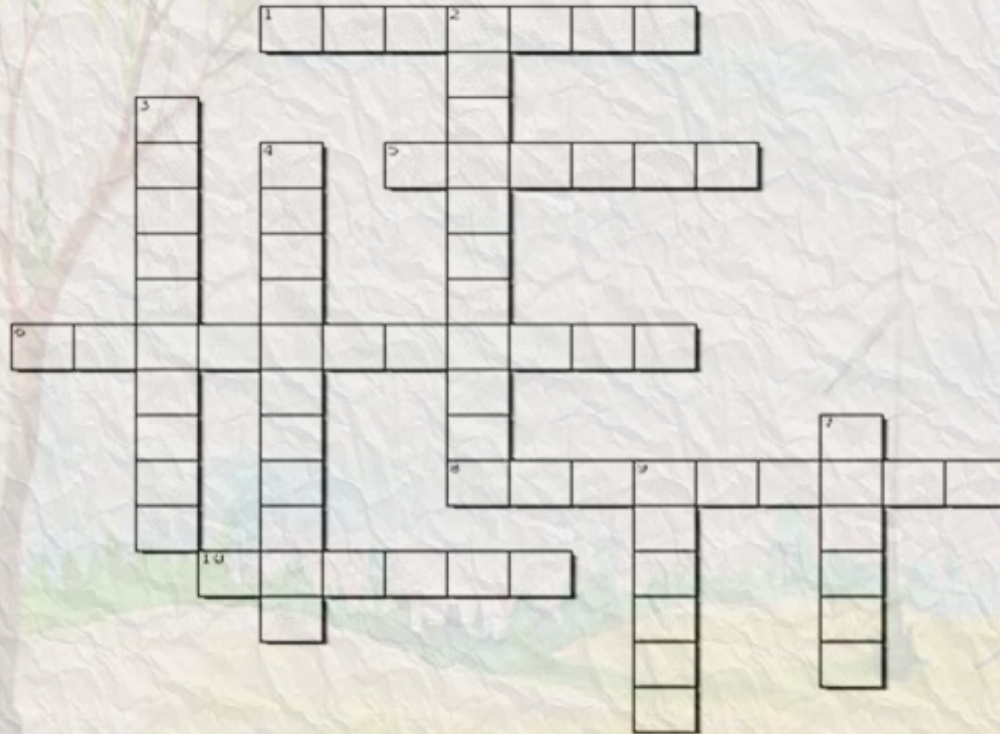
scene 67



- Cow-dung and various plant materials like the residue after harvesting the crops, vegetable waste and sewage are decomposed in the absence of oxygen to give bio-gas. Since the starting material is mainly cow-dung, it is popularly known as 'gobar-gas'.
- The plant has a dome-like structure built with bricks. A slurry of cow-dung and water is made in the mixing tank from where it is fed into the digester.
- The digester is a sealed chamber in which there is no oxygen.
- Anaerobic micro-organisms that do not require oxygen decompose or break down complex compounds of the cow-dung slurry. It takes a few days for the decomposition process to be complete and generate gases like methane, carbon dioxide, hydrogen and hydrogen sulphide.
- The bio-gas is stored in the gas tank above the digester from which they are drawn through pipes for use.
- Bio-gas is an excellent fuel as it contains up to 75% methane. It burns without smoke, leaves no residue like ash in wood, charcoal and coal burning.
- Its heating capacity is high. Bio-gas is also used for lighting. The slurry left behind is removed periodically and used as excellent manure, rich in nitrogen and phosphorous.

Self-Assessment

CROSSWORD



Across

1. Materials present in plants and animals
5. Gas obtain from anaerobic decomposition
6. One of the ways that plants can produce seeds.
8. Composite place for living and nonliving
10. a combination of breakfast and lunch

Down

2. Commercial fish farming
3. Rearing of bees
4. Fish culture
7. Medicinal plant
9. Rich in manure

Across
 1. Materials present in plants and animals (biomass)
 5. Gas obtain from anaerobic decomposition (biogas)
 6. One of the ways that plants can produce seeds (pollination)
 8. Composite place for living and nonliving (ecosystem)
 10. a combination of breakfast and lunch (brunch)

Down
 2. Commercial fish farming (mariculture)
 3. Rearing of bees (apiculture)
 4. Fish culture (pisciculture)
 7. Medicinal plant (aethi)
 9. Rich in manure (slurry)

Answer key
 CROSSWORD

Pawan runs towards Prakash and whispers in his ears.

Papa now I have understood the working of the biogas plant.

That's the reason why your mamma and I planned the weekend here

Mamma I am tired as well as hungry. I want to rest. Please give me something to eat.

oh yes beta. We are very close to our organic farming park.

The workers are working in the field. Purva is amazed to see the 7 acres field full of golden corn, spinach, red tomatoes, cauliflower, eggplant, chilies, oranges, banana, papaya, guava trees etc.



In the field along with cotton and other crops. Ravi instructs the farmers to bring them roasted corn cobs. The children along with their mothers sit under the bower.

The workers serve them the roasted corn cobs.

Mumma, look it is so lush green here.

Ravi, I am surprised to see the wonder you have created here.

How do you manage to get a bumper yield without using pesticides and synthetic fertilizers.



- Genetically modified organisms, nanomaterial, human sewage sludge, plant growth regulators, hormones, and antibiotic use in livestock husbandry are prohibited.
- Reasons for advocating organic farming include advantages in sustainability, openness, self-sufficiency, autonomy/independence, health, food security, and food safety.
- Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects.
- Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.





- The kinetic energy of the wind can be used to do work. This energy was harnessed by windmills in the past to do mechanical work.
- To generate electricity, the rotatory motion of the windmill is used to turn the turbine of the electric generator. The output of a single windmill is quite small and cannot be used for commercial purposes.
- Therefore, a number of windmills are erected over a large area, which is known as wind energy farm. The energy output of each windmill in a farm is coupled together to get electricity on a commercial scale.

They all walk towards the solar farm



Ravi, you have changed our perception of a village. You have made use of the modern technologies to carve a modern village.



- The Sun has been radiating an enormous amount of energy at the present rate for nearly 5 billion years and will continue radiating at that rate for about 5 billion years more.
- Only a small part of solar energy reaches the outer layer of the earth's atmosphere.
- Nearly half of it is absorbed while passing through the atmosphere and the rest reaches the earth's surface.
- The solar energy reaching unit area at outer edge of the earth's atmosphere exposed perpendicularly to the rays of the Sun at the average distance between the Sun and earth is known as the solar constant.
- It is estimated to be approximately 1.4 kJ per second per square metre or 1.4 kW/m².



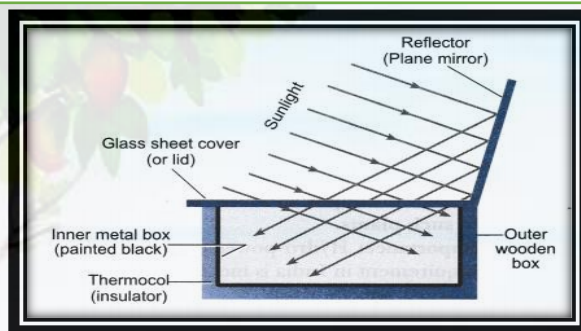
Solar Cooker

scene 67



- Solar cookers can be set up in remote and inaccessible hamlets or very sparsely inhabited areas in which laying of a power transmission line may be expensive and not commercially viable.
- Silicon, which is used for making solar cells, is abundant in nature but availability of the special grade silicon for making solar cells is limited.
- The entire process of manufacture is still very expensive, silver used for interconnection of the cells in the pane further adds to the cost.
- In spite of the high cost and low efficiency, solar cells are used for many scientific and technological applications.
- Artificial satellites and space probes like Mars orbiters use solar cells as the main source of energy. Radio or wireless transmission systems or TV relay stations in remote locations use solar cell panels.
- Traffic signals, calculators and many toys are fitted with solar cells.
- The solar cell panels are mounted on specially designed inclined roof tops so that more solar energy is incident over it.

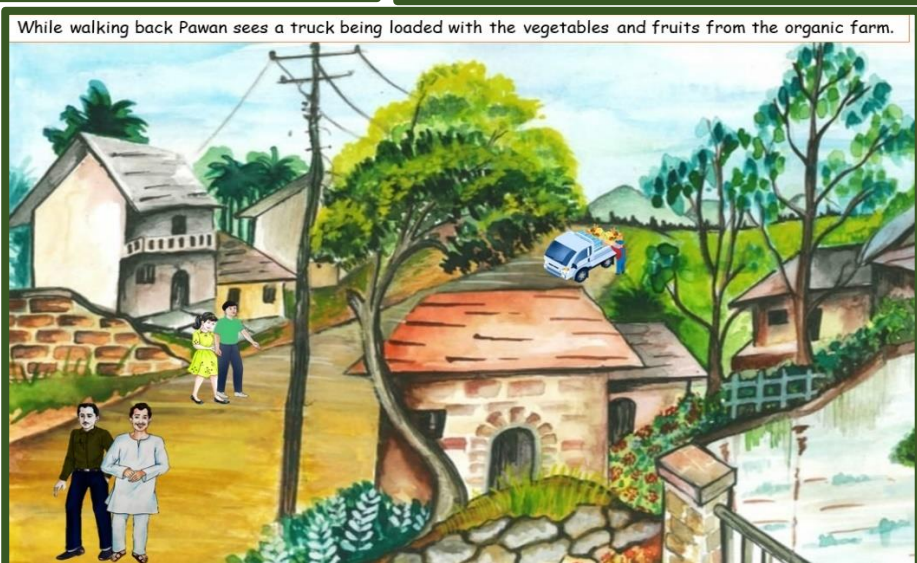
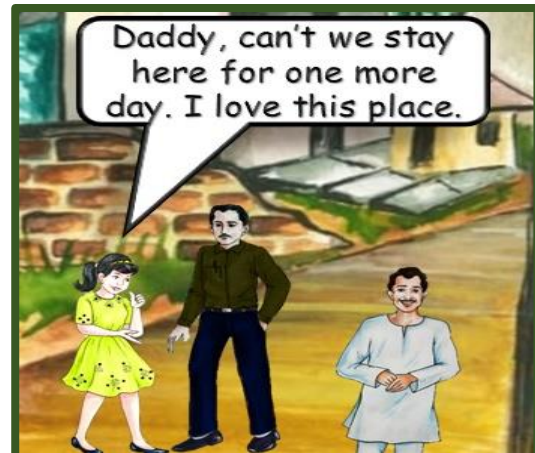




scene 67

A box-type solar cooker consists of a box which is an insulated metal or a wooden box. It is painted black from inside because black surface absorbs more heat. The box may be provided with four roll-wheels. The Glass cover is made of two sheets of toughened glass held together in an aluminium frame is used as a cover of the box. A plane mirror reflector fixed in a frame is fixed to the box with the help of hinges. The mirror reflector can be positioned at any desired angle to the box. The mirror is positioned so as to allow the reflected sunlight fall on the glass cover of the box. A set of containers made of aluminium and blackened from outside are kept in the box. These containers are also painted black because black surface absorbs more heat. The food is cooked in a shallow vessel of the container. The box has a transparent covering of glass sheet over it. The solar cooker is placed in sunlight and reflector (plane mirror) is adjusted in such a way that a strong beam of sunlight enters the box through the glass sheet. The blackened metal surfaces in the wooden box absorb infra-red radiations from the beam of sunlight and heat produced raises the temperature of blackened metal surface to about 100°C .

The food absorbs heat from the black surface and gets cooked. The thick glass sheet does not allow the heat produced to escape and thus, helps in raising the temperature in the box to a sufficiently high degree to cook the food.





scene 67



Recycle



Reuse



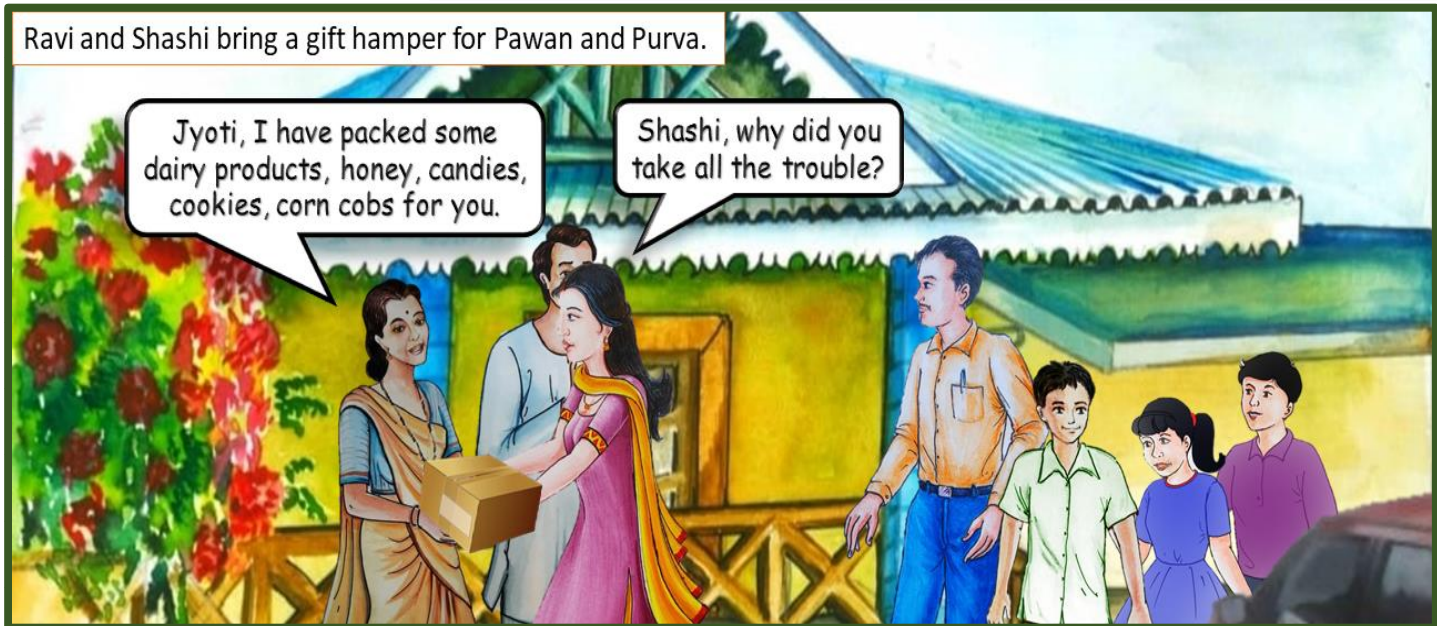
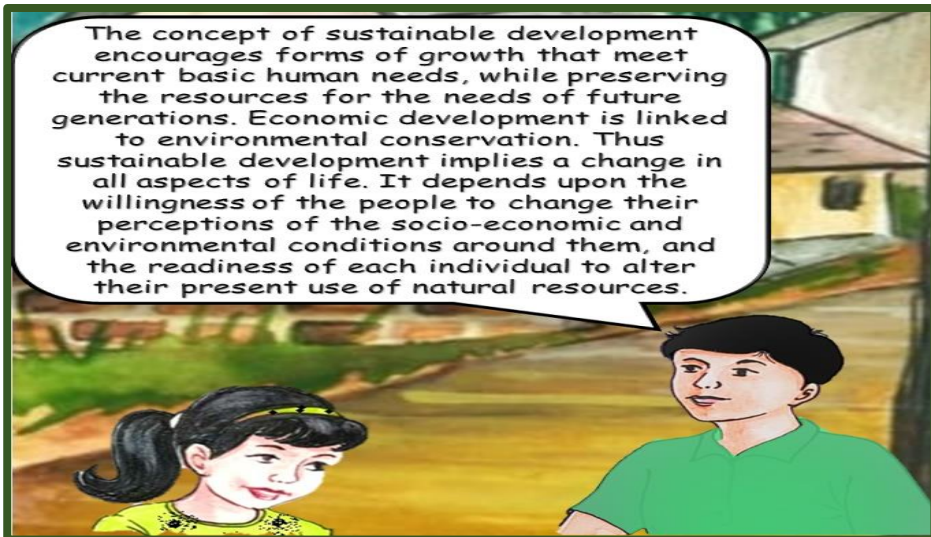
Reduce

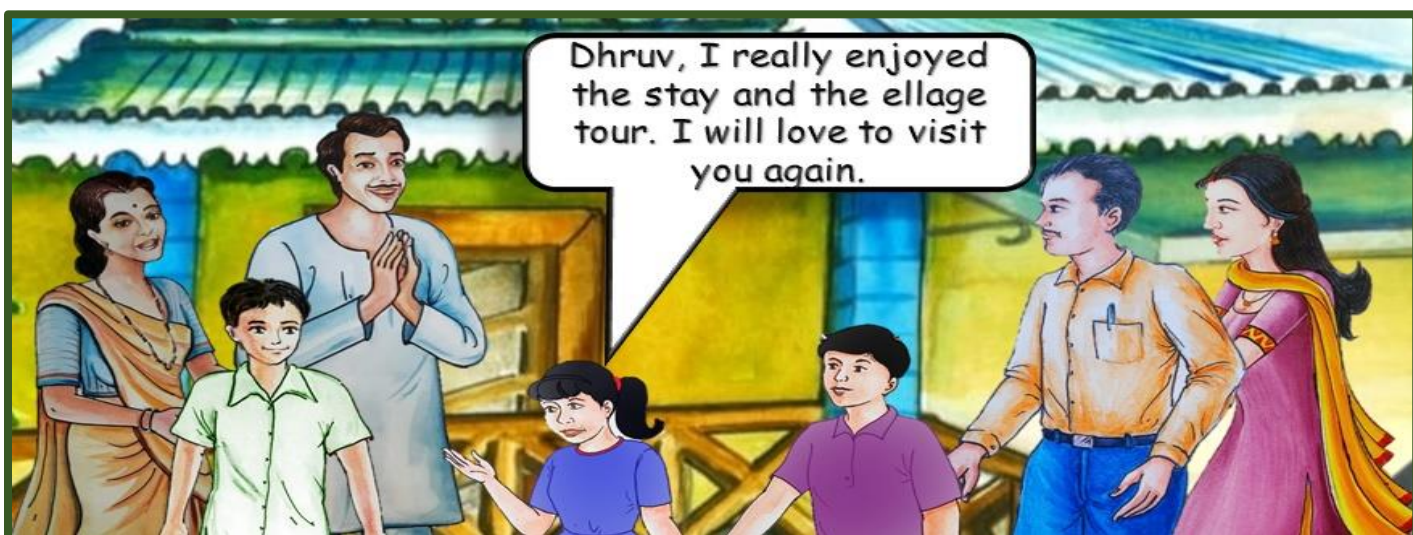
Reduce means that you use less. You save electricity by switching off unnecessary lights and fans. You save water by repairing leaky taps. You do not waste food.

Recycle means that you collect plastic, paper, glass and metal items and recycle these materials to make required things instead of synthesizing or extracting fresh plastic, paper, glass or metal. In order to recycle, we first need to segregate our wastes so that the material that can be recycled is not dumped along with other wastes.

Reuse is actually even better than recycling because the process of recycling uses some energy. In the 'reuse' strategy, you simply use things again and again. Instead of throwing away used envelopes, you can reverse it and use it again. The plastic bottles in which you buy various food-items like jam or pickle can be used for storing things in the kitchen.

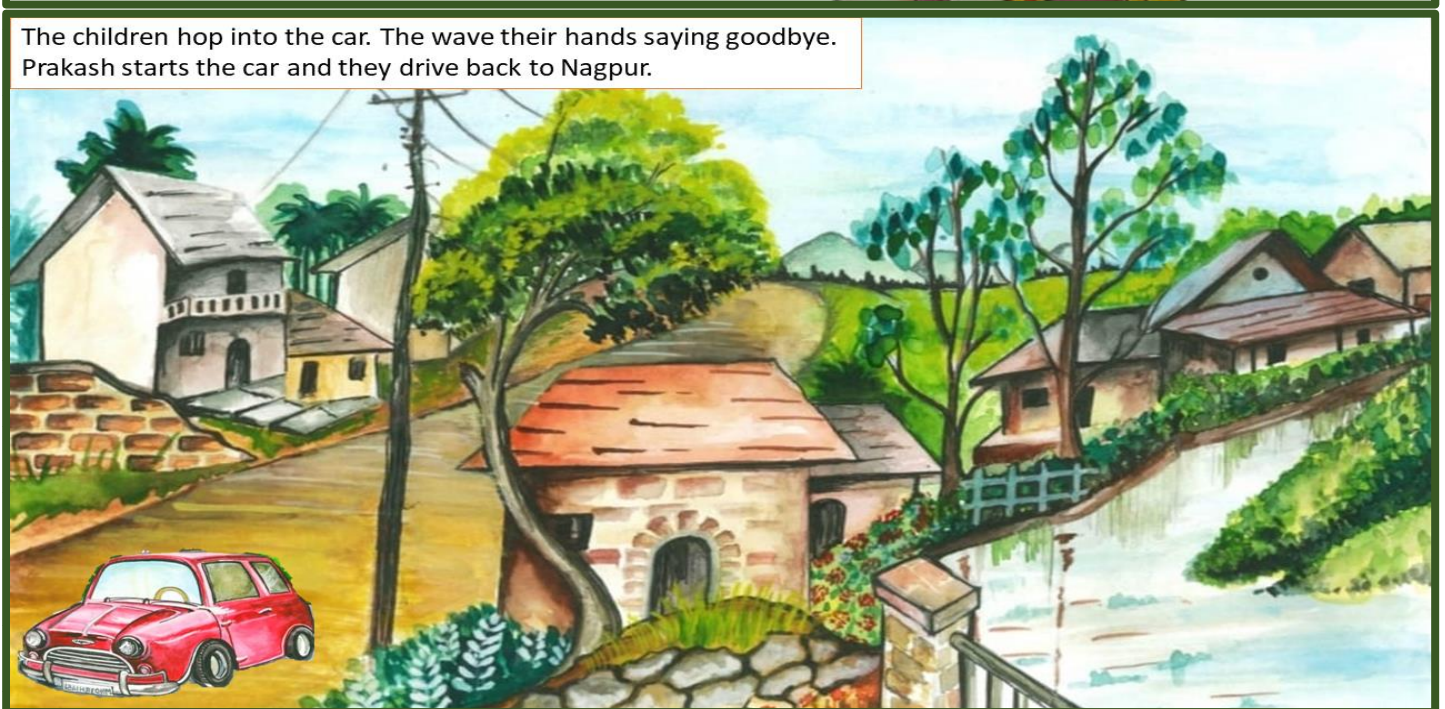








The children hop into the car. They wave their hands saying goodbye. Prakash starts the car and they drive back to Nagpur.



Self-Assessment

FILL IN THE BLANKS

- Kinetic energy of wind can be converted into _____ energy.
- The daily average of _____ energy varies from 4 to 7 kwh/m²
- Cooking device used to cook food with help of solar heat is called _____.
- _____ is used for making solar cells.
- Rice straw is used as _____.
- _____ can't be used at night.
- Reduce means we use _____.

TRUE OR FALSE

- A pond/lake is an unnatural ecosystem.
- The most important element for an ecosystem is air.
- 'Pisciculture' is culture of bees.
- Biogas consists of 75% methane.
- Pond ecosystem supports with natural environment.
- Mariculture involves growing plants for commercial use.
- Apiculture helps in pollination.

Answer key
Fill in the blanks
a) electric b) solar c) solar cooker d) Silicon
e) fodder f) Solar devices g) less
True or False
a) true b) false c) false d) true e) true f) false g) true

Check your knowledge

SELECT THE BEST ALTERNATIVE FROM THE GIVEN OPTIONS

- a)** The dead remains of plants and animals is known as
i) biogas ii) biomass iii) biofuel iv) natural fuel
- b)** The constituent amount of methane in biogas.
i) 75% ii) 85% iii) 90% iv) 65%
- c)** Working principle of wind mill is
i) Kinetic energy of the wind into mechanical or electric energy
ii) Potential energy of the wind into mechanical or electric energy
iii) Kinetic energy of the wind into potential energy
iv) Kinetic energy of the wind into wind energy
- d)** A cluster of windmills is called
i) Multiple energy ii) wind energy firm
iii) energy factory iv) hybrid energy
- e)** The ultimate source of energy is
i) water energy ii) solar energy
iii) wind energy iv) fuel energy

ANSWER THE FOLLOWING QUESTIONS

- a)** What are the advantages and disadvantages of using solar cooker?
- b)** List any two limitations in harnessing wind energy.
- c)** Enumerate the link between organic farming and slurry of bio gas plant.
- d)** How can we overcome the energy crisis?
- e)** Differentiate between box type solar cooker and spherical reflector type of solar cookers.

GLOSSARY

Cottage	a small house, typically one in the country
Ecology	the branch of biology that deals with the relations of organisms to one another and to their physical surroundings.
Ecosystem	a biological community of interacting organisms and their physical environment.
Magnificent	extremely beautiful, elaborate, or impressive.
Organic	relating to or derived from living matter.
Pesticide	a substance used for destroying insects or other organisms harmful to cultivated plants or to animals.
Rejuvenate	give new energy
Sustainable development	economic development that is conducted without depletion of natural resources
Yearn	have an intense feeling of longing for something

BIBLIOGRAPHY

References:

- ✓ Science text book for class X
- ✓ Together with science class X by Rachana Sagar

Links:

- ✓ <https://youtu.be/3uafrz3qeo8>
- ✓ <https://www.youtube.com/watch?v=uxvxafrzjqg>
- ✓ <https://youtu.be/d7sowwmlecg>

Websites:

- ✓ Teacherscorner.net
- ✓ Facial Expression Changer

Softwares:

- ✓ Change Color app from Playstore
- ✓ Microsoft Word
- ✓ Microsoft PowerPoint

DISCLAIMER

This graphic novel is published as sympathetic interpretation material for empowering the students to appreciate the environment and utilise its renewable resources more thoughtfully.

The illustrations have been premeditated by the team of teachers and they ensure ingenuity. The story has not replicated any real-life situation or episodes. The images incorporated in the story help in explaining the concept in a fun-filled and enhanced way to the learners. The given key contents are checked, printed and published by Delhi Public School, Kamptee Road, Nagpur, Maharashtra.

Copyright – All Rights Reserved

No part of this Graphic novel may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronics, mechanical, photocopying, recording or otherwise without the prior permission of the school.

FROM THE PRINCIPAL'S DESK



'Art Integration in education allows us to build chefs who take decisions, not cooks who merely follow recipes.' - Susan Riley

I ardently believe and live by the maxim given by Albert Einstein decades ago that 'imagination is more important than knowledge'. To make imagination, creativity and expression a tool for formal and academic education must be the ultimate and most profound goal of a teacher.

When the prospect of making graphic novels a means of tackling challenging topics in Science and Social Science was put forth, I was ecstatic. The perfect blend of art and science is in fact to mind what harmony and balance are to music.

The projects undertaken by the school under the aegis of the veteran educationist Mr. Sandeep Sethi, opened new vistas of teaching techniques enabling us to chase new horizons in the field of education.

This science graphic novel is based on the story board which contains the important sub-topics of the stated science chapter. I endeavour that my school, my students and staff, immerse themselves in such experiential, art integrated, satisfying and highly effective methods of teaching and learning and evolve into individuals with a high quotient of critical thinking and problem solving.

The great Leonardo Da Vinci combined art and science and aesthetics and engineering, that kind of unity is needed once again. And we hope to achieve it someday.

Ritu Sharma
Principal
Delhi Public School Kamptee Road, Nagpur



Ellage is an innovative story of an urban family visiting their relatives at Lodhikheda, a rural village. Purva and Pawan initially hesitated at the idea of spending a weekend in the village anticipating the backwardness of the rural area. After visiting the village they were awestruck and spellbound to see an independent village comprising of the judicious use of all natural resources along with their conservation. The duo were dumbfounded to perceive the ambience and the self-sufficiency of the Ellage. The children could relate the pond ecosystem, cattle farm, biogas plant, organic farming, hybrid power plant, waste management system with their school curriculum.



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



1064CH14

Delhi Public School, Kamptee Road, Nagpur
(Affiliated to C.B.S.E)

Opp. 11 Kms Milestone, Kamptee Road, P.O.Khairi, Nagpur - 440026

Ph. : 9607588882, 9607228882

Email : info@dpsnagpur.com

Website: www.dpsnagpur.edu.in