Appendix A

Developed Program

Activity 1

Topic: Tissues

Total Time: 80 mins

Materials used: Microscope, Permanent slides of Tissue, paper, pen

Exercise

The students were divided into team A, Team B, Team C, and team D. They were instructed to observe permanent Tissue slides through a microscope and note down their observations. Five minutes were allotted to each group for comment. Ten minutes were given to all the groups for discussing their statements within the group. A student, a volunteer from each group, was asked to explain their words as a group within five minutes, in front of the whole class. All the students were instructed to note down all the points and prepare a description. The next day, the researcher discussed that descriptive report in the class and a few remaining moments to explain the concepts were added to the discussion.

Learning outcomes and feedback

Students could develop the meaning of Tissue and different tissue types through their observations from the permanent slides. Discussion of the topic at the end helped students understand the concept thoroughly. Students learned the importance of teamwork, compliance, time restrictions, presentations skills, peer pressure.

Like Skills enhanced

Thinking Skills: Creative thinking, critical thinking, and decision making.

Social Skills: Communication Skill, Interpersonal relationship.

Emotional Skill: Coping with stress.

Activity 2

Topic: Types of Tissues

Total Time: 90 mins

Materials used: Science and technology book (IX standard, NCERT), paper, pen, pencil.

Exercise

The topic was divided into two parts by the researcher: Animal Tissue and Plant Tissue. Students were asked to open the case "types of tissue" in their book. Students were instructed to choose either animal tissue or plant tissue, read accordingly for five minutes, and note down a critical point during their reading.

After five minutes of reading, two groups were divided quickly based on two divided parts of the topic. One student from each group had to present their noted point in one minute while explaining that point and may answer any question raised by fellow students. Other students have to note down the issues described by the speaker students and then make a paragraph report on that topic. Students were asked to create different sections for both parts of the case while preparing the report.

At the end of the activity, the researcher revised the topic with the students and amended it wherever needed to make them understand the concept according to their level.

Learning Outcomes and feedback

Students could generalize the topic after self-reading and self-analyzing the critical points. Students could realize the importance of healthy discussion. Students could understand how to justify their opinion while answering the questions raised by other students.

Life skills enhanced

Thinking Skills: Creative thinking, critical thinking, and decision making.

Social Skills: Communication Skills, Empathy.

Emotional Skill: Coping with stress.

Activity 3

Topic: Force, Balanced and unbalanced force

Total Time: 120 mins

Materials used: Rope, Powder, Pen, Paper

Exercise

Students were taken outside the classroom, in an open area (playground), and were divided into four teams with an equal number of participants in each section. All the teams were asked to choose one group leader to manage all the group activities. In the first session, the game of tug of war was organized between two teams, and the other two teams were instructed to note down the observations related to the concept of force. Similarly, in the second session, a tug of war was played between the other two teams, and the first two teams were instructed to note down their observations.

After finishing the game, five minutes were given to all the teams to finalize their observations. Each group leader was asked to explain their words while explaining the concept in their way. Lacking points were discussed by the researcher to make the topic more transparent for the students.

Learning outcomes and feedback

Students could explain force while observing each part of the game, such as at the start, the party was zero when there was no movement. Later, when the rope moved to one side (wherever the force applied was more than the other side), the student inferred that it was due to a balanced and unbalanced force.

Students could also come up with the importance of teamwork, coordination between the team, analyzing self-strengths.

Life Skills Covered:

Thinking Skills: Decision Making.

Social Skills: Empathy, Interpersonal relationship.

Emotional skills: Coping with stress, self-awareness.

Activity 4

Topic: Cell Organelles

Total Time: 90 mins

Materials used: Pen, Paper

Exercise

Students were asked to form a bingo of 5*5 Carrying 25 boxes. The researcher read 25 words related to the concept "cell organelles" and wrote one word in each box. After writing words, students were instructed to listen carefully to all the statements read by the researcher and mark 1, 2, 3 in the trunks of framed bingo with the related word. The researcher read definitions or meanings of these words one by one, and students mark as instructed. Whosoever will get first bingo will shout first.

After finishing bingo, each student was invited to either raise a question or answer any question (if possible). All the students participated in the question-answer session as per their own choice.

Learning outcome and feedback

The student could develop several explanations and justifications for different cell organelles having different shapes, sizes, functions. Question-answer sessions could lift their communication, analytical and critical thinking. Concentration and presence of mind, along with curiosity among students towards the topic, were also enhanced.

Life Skills Covered:

Thinking Skills: Decision Making, critical thinking.

Social Skills: Communication skill

Emotional skills: Coping with stress.

Activity 5

Topic: Cell

Total Time: 90 mins

Materials used: Pen, Paper, bowl

Exercise

Students were divided into four groups and instructed to choose their group leader with mutual consent. Before starting the activity, twenty minutes were allotted to each group for reading the whole topic from their book and preparing four chits (essential points about the case should be written). In the meantime, the researcher converted the blackboard into a scoreboard for all the groups (making four columns as group A, group B, group C, group D). Chits were collected by the researcher and mixed in a bowl. Two students (selected by the group leader) were asked to pick up a chit from the bowl and explain the critical point mentioned in the chit within 2-3 lines.

Meanwhile, others were instructed to note down or listen carefully to the speakers and if there is a need for any correction, raise their hands. Maximum modifications and minimum mistakes from any group got total points. The researcher rewarded the winning team and was given a chance to verbalize the reason for their triumph.

Learning outcome and feedback

For their ease and fast reading, students, in each group, divided the concept into small parts. Each group member got a small portion to read and understand easily (the distribution was according to their mutual understanding). They (students within each group) helped each other to grasp the complete topic. To direct the discussion effectively (whenever needed), the researcher also intervened in between (if speakers didn't get proper words to explain) with a few imperative words related to the concept, such as amoeba, multi-cellular organisms, Hooke, plasma-membrane, osmosis. It was observed during the activity that students understand easily when educated by their peer groups.

Students could develop their comprehension skills by reading within a limited time. Making corrections while listening to the speaker would help students to develop their concentration and listening skills.

Life Skills Covered:

Thinking Skills: Decision Making, critical thinking, creative thinking, problem-solving.

Social Skills: Communication skills, Empathy, interpersonal relationship.

Emotional skills: Coping with stress.

Activity 6

Topic: Water

Total Time: 120 mins

Material used: Smart boards

Exercise

Students were divided into four groups. Each group was asked to prepare a presentation on water. All the groups were assigned different methods for the display through the pick and choose system. The options given to them were: simple smartboard presentation, skit, debate, quiz competition, paper presentation. One member of each group was asked to choose a method from five different options. The instructions and essential highlights about the production and assigned form of presentation were discussed with all the groups. One week was given to the students as a preparatory period. Accordingly, after a week, a representation was made by each group with their best possible efforts.

Learning outcome and feedback

All the groups were very creative while presenting their preparation. In between their preparatory period, they also approached the researcher for guidance and suggestions. The presentation was on water: its uses, importance, overuse and depletion, water pollution: causes, effects, measures to deal with water pollution. The presentations were not restricted to only these mentioned dimensions; instead, all the groups were free to present their research even beyond (if there was any vital information about the presentation topic). Students' creativity could be easily be observed from their presentations. After complete presentations by all the groups, the researcher highlighted and discussed the critical observations from all the expressions with the students.

Life Skills Covered:

Thinking Skills: Decision Making, critical thinking, creative thinking, problem-solving.

Social Skills: Communication skills, Empathy, interpersonal relationship.

Emotional skills: Coping with stress.

Activity 7

Topic: Evaporation

Total Time: 90 mins

Materials used: pen, paper, pencil, salt, wet cloth, jar, glass, water

Exercise

Evaporation is a phenomenon, which could easily be observed in daily life during day-to-day activities. So, the researcher planned the activity for evaporation accordingly (relating it with

daily routine work). Four actions were explained to the class and mandated all the students to choose any two they felt interested in doing independently (at home). They were instructed to perform any two activities at home, note down their observations in the observation sheet (provided in Appendix C) given, and bring them back again for further discussion.

The next day, students were asked to exchange their worksheets, and fifteen minutes were given to all the students to compare their observations with exchanged worksheets and find out the difference and similarities in both the works. The researcher facilitated the class with a few more examples (Such as drying out of the skin after bathing, taking tea in a saucer, feeling thirsty again and again more in summer as compared to winter) and explained the scientific phenomenon (evaporation) behind all the activities (performed by students) from their observations (worksheets). Five volunteers were asked to present the conclusion and aid the discussion within the class with a few more examples from their experiences.

Learning outcome and feedback

Students could come up with the meaning of evaporation and related phenomenon through their observations. Some students even tried the same activities with other liquids such as juice and lemon water and discussed the findings. Students observed that rate of evaporation changes with the change in medium, outside temperature, size of the container. Many more different illustrations suggested by the students (mentioned below) were discussed during the discussion.

1. evaporation in water content of fruits and vegetables when kept in a sunny area,
2. open pen kept under a fan,
3. drying up of leftover tea in a saucer,
4. the immediate drying up of hairs when hair dryer was used
5. drying of wet floors after cleaning
6. evaporation of nail paint remover
7. evaporation of sweat from the body

Life Skills Covered:

Thinking Skills: Critical thinking, creative thinking, problem-solving.

Social Skills: Communication skills, Empathy, interpersonal relations.

Emotional skills: Self-awareness, coping with emotions, dealing with stress.

Activity 8

Topic: Life History of Newton

Total Time: 90 mins

Material used: Smart board

Exercise

The class was divided into five groups, and a project was handed over to them on the life history of Newton. Students were asked to comprehend the life of great Scientist Newton from different sources (books, internet) and formulate a brief report of 300 words highlighting his experiences, motivational incidents of his life, and his contributions to society. Students were also asked to relate any situation of their life to the situation in Newton's life and report that relation in their work.

The next day, a debate was organized by the researcher involving all five groups. One volunteer was asked to chair the discussion. The discussion was divided into two parts; in the first part, the life history of Newton and his contributions (laws of motion) were discussed, and the second part was devoted to inspirational conclusions drawn after short research on the life history of a scientist.

Learning outcome and feedback

Students come up with an understanding of the laws of motion and how Newton deduce these laws while understanding Gaglio's interpretations. After reviewing Newton's life history, most of the students interpreted that struggles in life could not be the reason for any failure; instead,, it encourages individuals to achieve their goal. Few students wrote, "I also wanted to be a scientist as their life is so exciting and their contributions were remembered for centuries". Three girls mentioned Kalpana Chawla as their role model and desired to be like her.

Life skills covered:

Thinking Skills: Decision Making, critical thinking, creative thinking, problem-solving.

Social Skills: Empathy, interpersonal relationship, communication skills.

Emotional skills: Coping with stress, coping with emotions, and self-awareness.

Activity 9

Topic: States of matter

Total Time: 120 mins

Exercise

To help students understand different states of matter, the researcher used role-play as an activity. Students were asked to arrange themselves in four groups (as per their choice). Roles were assigned to all the groups, such as group A was instructed to perform the function of solids, group B as liquids, group C as gases, and group D acted as a mediator. The whole situation and their respective roles were explained to all the groups. Before starting the activity, students were given fifteen minutes to read from their science book about roles assigned to them. Students of group A (playing the role of solids) read about solids, and accordingly, all

the groups read about their respective positions. Still, group D was instructed to read approximately the whole topic (because it has to work as a mediator).

Group A was asked to stand closely, holding each other's hands securely. Similarly, group B and group C has to stand nearby, holding hands insecurely and without holding hands, respectively. First, groups A, B, and C discussed a few critical points about themselves (solid, liquid, and gases, respectively) and started contradicting each other's limitations and delimitations. Group D came forward and settled their issue by discussing everyone's importance.

Learning outcome and feedback

Students could differentiate between three states of matter, properties of matter, limitations, and delimitations of each state of matter. They could also justify that the gases have high compressibility compared to solids and liquids, and hence in compressed form, a large volume of gas can be easily stored in small cylinders. While the discussion was going on, the researcher, with the help of a few more examples, such as the reason behind floating ice on the water, clarified all the doubts and queries from the students. Students could also understand the importance of interpersonal relationships, bonding, the importance of everyone, and self-analysis.

Life Skills Covered:

Thinking Skills: Decision Making, critical thinking, creative thinking, problem-solving.

Social Skills: Communication skills, Empathy, interpersonal relationship.

Emotional skills: Coping with stress, self-awareness.

Activity 10

Topic: Mixtures

Total Time: 120 mins

Materials used: four beakers, common salt, water, sugar, chalk powder, one spoon, paper, pen, and pencil.

Exercise

The class was divided into four groups and instructed to choose their group leader. Four chits were prepared by the researcher on which method for preparation of mixtures was written. The researcher invited group leaders to pick a chit and prepare the mix as instructed.

After preparing mixtures, all the four beakers containing mixtures were distributed among groups and directed to write five observations. Ten minutes were given to them to write words, and then they were asked to exchange their combination with another group. The trading and writing observation process was carried out two times so that each group got two varieties for

better understanding. All the four group leaders were invited to present their words, and comparisons and differences were debated. The observation sheets were collected, followed by a comprehensive discussion for clearing doubts and queries from the students.

Learning outcome and feedback

Students reported their definitions for mixtures and could differentiate between homogeneous and heterogeneous mixtures through their observations. They also observed that the concentration of a solution depends upon the amount of solute present in a solution. Students could easily underline the difference in resolution and suspension and even figure out many daily life examples during discussion.

Life Skills Covered:

Thinking Skills: Decision Making, critical thinking, creative thinking, problem-solving.

Social Skills: Communication skills, Empathy, interpersonal relationship.

Emotional skills: Coping with stress, self-awareness.

Methods for preparation of Mixture:

Method 1

Add five tablespoons of sugar to a beaker containing 100 ml water and mix well.

Method 2

Add five tablespoons of salt in a beaker containing 100 ml water and mix well.

Method 3

Add five tablespoons salt and five tablespoons sugar in a beaker containing 100 ml water and mix well.

Method 4

Add five tablespoons of chalk powder in a beaker containing 100 ml water and mix well.

Activity 11

Topic: Crop production management

Total Time: 120 mins

Exercise

The topic was divided into small parts by the researcher and listed pointwise. Three points were framed out of the whole theme, namely nutrient management, irrigation, cropping patterns. One day before the actual class, students were briefed with all the listed points and instructed to choose one particular for their further research. They were asked to formulate a surveyed research report (not more than 100 words) after discussing and gathering information from their parents, friends, neighbours about the chosen sub-topic. Few restrictions (not to the check or use book, a new idea would be rewarded, not to discuss with each other, don't be biased with

the topic, don't copy each other, examples should be mandatory, word limit should be strictly followed) were imposed on all the students.

The next day, the class was divided according to listed sub-topics (chosen points), such as all the students who selected the first point counted as one group, and accordingly, all the groups were formed. Ten minutes were given to all the groups for discussing similarities and dissimilarities from their reports and other related information within the group. After ten minutes, one by one, all the groups presented their collaborative reports. Students mostly used day-to-day and real-life examples to strengthen their stand. All the students gathered information from their homes and neighbours, making the topic more understandable, clear, and logical.

Learning outcome and feedback

The students reported that they enjoyed preparing a research report. They stated that while gathering information, they learned about various traditions and practices carried out before and after crop production by their grandparents and even before that. Some of the students also revealed some vital manuring and storage practices used by their grandparents and great-grandparents, such as oiling seeds, using neem leaves while storing crops, using dried cow dung as manure, and ploughing green waste. Traditional methods used for irrigation (chain pump, Rahat or lever system) and crop production were also discussed along with new technologically advanced techniques, which helped students get in-depth and experiential knowledge about the topic. Through their research, students also learned, which they further discussed in the discussion session during the activity, the dangerous effects of fertilizers on food quality.

Some of the students also stated that their parents and grandparents felt very closed and heart touched when they approached them and started telling stories of their young age. Through the research-based activity, students could understand the importance of the sense of inquiry and could enhance analytical skills effectively, which in broader way help students to develop their critical thinking.

Life skills covered:

Thinking Skills: Decision Making, critical thinking, creative thinking, problem-solving.

Social Skills: Communication skills, Empathy.

Emotional skills: Coping with stress, coping with emotions, and self-awareness.

Activity 12

Topic: Separating the components of a mixture

Total Time: 120 mins

Materials required: Stones of different colours and sizes, Harvested rice paddy, Rice with husk, chalk powder, Iron filings, sand, Magnet, Rice, paper clips, nails, water, filters, beakers.

Exercise

The class was divided into eight groups, and each group was given a worksheet and four different mixtures. Groups were instructed to observe the mix, identify other components of the medicines, and try to deduce the most suitable and most accessible methods to separate all the mix details. They were asked to note down all the results in the worksheet given to them (Appendix c).

Three more activities were explained to all the groups, and instructed to perform them at home with the help of their parents and note down all the observations in the worksheets provided.

The next day, each group has to present their observations and methods for separating components of mixtures. Joint separation techniques implemented by different groups were highlighted on the blackboard. After finishing all the presentations, the researcher initiated a discussion, and methods highlighted on the blackboard were discussed. After that, all other possible ways were also debated during the meeting.

Learning outcome and feedback

Students identified different components of the Mixture and accordingly figured out other separation techniques by themselves. They reported that separation of each

Life skills covered:

Thinking Skills: Critical thinking, problem-solving, decision making.

Social Skills: Communication skills, interpersonal relationships.

Emotional skills: Self-awareness, coping with stress.

Activity 13

Topic: Animal Tissue

Total Time: 90 mins

Exercise

It was a recapitulation activity. In the last class, students were briefed on the concept of Tissue, plant tissue, and animal tissue. Still, to clear all the doubts and make them understand the differentiation between plant and animal Tissue, the researcher played a game. The game was similar to 'antakshri', which the researcher named 'science antakshri' with specific twisted rules. The class was divided into four groups, one volunteer from each group was invited for a toss. "Stone, paper, scissor" was done for the toss, and the winner was given the first chance to start the 'Antakshri'. Similarly, the second, third and fourth were decided and accordingly given the opportunity. The group who won the first chance was asked to put forward any question related

to the topic, and the second group had to answer that question. Similarly, second, third, and fourth groups were requested to pose a question one by one, and third, fourth, and then first would answer one by one, respectively. Three minutes were given to reflect with the most justified answer; afterwards, they had to pass that question to the next group. Points were given to each correct answer and grace point for answering past questions. Groups who stood first, second, third, and fourth, respectively, were rewarded accordingly.

Learning outcome and feedback

Students enjoyed the activity and considered it a stress reliever. Some of the students even tried to draft questions and answers in rhyming form, exhibiting their creativity. Mostly the questions were explanatory and hence, needed a brief explanation. Students, while explaining answers, tried to present the most justified reasons, which aided them with in-depth clarity of the topic. Most of the students participated in the activity enthusiastically and answered questions posed by their fellow groups. Some of the students found a few points challenging to understand and learn, such as the difference in complex and straightforward permanent Tissue, Epithelial Tissue, which were taken into note by the researcher and discussed at the end. At the end of the activity, the researcher tried to clear all the doubts from the students, which made the concept more crystal clear for students.

Life Skills covered:

Thinking Skills: Critical thinking, problem-solving, decision making.

Social Skills: Communication skills, interpersonal relationships.

Emotional skills: Self-awareness, coping with stress.

Activity 14

Topic: Conservation of energy

Total Time: 90 mins

Exercise

The researcher initiated the discussion by giving examples from daily life related to energy conversion from one form to another.

Conversion of chemical energy to electrical energy in the torch batteries, electrical power into light in light bulbs.

A discussion was initiated by giving examples from daily life related to converting energy from one form to another. Students were encouraged to cite examples from day-to-day life related to energy conversion during the debate and concluded with the elucidation of 'Law of conservation of energy from their models. After the discussion was over, the researcher played a game to make the concept more lucid and comprehensible for the students. Worksheets

(Appendix C) were given to the students to complete within fifteen minutes. They were also briefed with a few instructions (how to complete the provided worksheets). After completing the worksheet, each student was invited to present two examples (one for each – energy conservation and energy wastage) from their own life (which they experience daily), other than mentioned in the worksheet.

Learning outcome and feedback

However, the class started with a discussion; soon, students could come up with an interpretation for energy conversion and conservation and wastage of energy. Students could derive the explanation for Law of preservation of power from the examples. Worksheet and after worksheet discussion helped them better understand the importance of energy saving in our daily lives. They could also conclude that energy transformation on Earth is the critical factor for sustaining life on Earth.

Life skills covered:

Thinking Skills: problem-solving, critical thinking, and decision making.

Social Skills: Communication Skills.

Emotional Skill: Coping with stress, self-awareness

Activity 15

Topic: Crop Variety

Total Time: 180 mins

Exercise

A field trip was planned to the nearby fields for students to provide them with experiential learning. Worksheets were given to all the students to note down their observations and answer all the questions given in the worksheet. On the fields, students were guided by a farmer who could give them more appropriate and easy-to-understand information related to crop varieties, factors essential for improving crop yields, crucial phases in the production and management of crops. Students were asked to prepare a report of 150 words explaining their observations and discussion with the guiding farmer. The next day, a debate was carried out in the class.

Learning outcome and feedback

Students felt very excited after seeing paddy and cotton fields very closely. They gathered information about different paddy, wheat, cotton, bajra, maize, and other crops. Students also gathered information about different other important factors affecting crop production. They could interpret the importance of various activities such as crop variety, crop nurturing, and its protection in improving crop yield. Students could also relate the determined and laborious inputs added by the farmers in obtaining the best outcome. They reported that they could easily

comprehend the irrigation needs of different crop varieties grown locally and other related requirements necessary for the best result.

Life skills covered:

Thinking Skills: critical thinking and decision making.

Social Skills: Communication Skills, Interpersonal relationship, Empathy

Emotional Skill: Coping with stress, self-awareness.

Appendix B

Worksheet 1

Name: **Roll No:**

Q. No. 1 Yesterday, in the science class, you learnt about Force. Your friend was absent from the class yesterday. So, your teacher assigned you to help your friend to understand the concept. You explained the whole topic to your friend, but even after four attempts, he could not understand that concept. You found an idea to make him/her understand the concept and invite him/her for a football game. With the help of a football game, explain the concept to your friend.

Q. No. 2 List any two games which you like to play with your friends. Give reason.

Q. No. 3 Mention Life Skills that you have learnt during activity 1, 2 and 3.

Worksheet 2

Name: **Roll No:**

Q. No.1 We could feel the effect of cooling due to evaporation in:

a) Sprinkle of water on the roof

b) Pouring of nail polish remover on palm

c) Both a and b

d) Neither a nor b

Explain the reason for your answer.

Q. No. 2 You and your friend is competing with each other, who will finish first a cup of hot tea. You pour your tea into the saucer and sip while your friend uses a cup.

a) You will finish first

b) Your friend will finish first

c) You both finished at the same time

d) None of the above

Q. No. 3 Give a reason in support of the above answer.

Q. No. 4 you are preparing lemonade for your friend. You added two scopes of sugar to a glass of water. One scope carries 20gm and glass has a capacity of 320gm. Your friend is fond of sugar, but he is diabetic also; he came inside the kitchen and wanted to know about the sugar concentration in water. You calculated the concentration for him so that he could know that there is sufficient sugar in lemonade.

a) 1.11%

b) 1.15%

c) 11.1%

d) 1%

How You calculated the concentration.

Will you give him extra sweet lemonade?

Q. No. 5 Compare, What you have learnt in activity six and activity 7.

Q. No. 6 Mention Life Skills that you have learnt during activity 4, 5 and 6.

Worksheet 3

Name: **Roll No:**

Q. No. 1 Considering any incidence from the life history of great scientist Issac Newton which inspired him most for his achievements prepare a worksheet.

Incidences	Purpose of Life	Strengths	Overcoming difficulties	Achievements and benefits to society

Q. No. 2 Write in few words how life history of Issac Newton inspires you.

Q. No. 3 Mention Life Skills that you have learnt during activity 7, 8 and 9.

Worksheet 4

Name: **Roll No:**

Q. No. 1 What was your contribution in the activity 10?

Q. No. 2 Which was the most difficult situation during the activity 10?

Q. No. 3 what was your observation and your group's observations in activity 12?

Q. No. 4 How your group leader was different from other group leaders in activity 11?

Q. No. 5 which was the important observation because of that, you won/lose in activity 10?

Q. No. 6 why your group was different from other groups in activity 10 and 11?

Q. No. 7 Mention Life Skills that you have learnt during activity 10, 11 and 12.

Worksheet 5

Name: **Roll No:**

Q. No. 1 Prepare a report on field trip highlighting on few important points given below:

- Different varieties of crops seen
- Importance of these crops
- Important raw material
- Ways for the improvement of crop varieties

Q. No 2 Compare your experience during activity 13 and activity 14

Q. No. 3 Mention Life Skills that you have learnt during activity 13, 14 and 15.

Appendix C

Activity Sheets

Observation Sheet for activity 7

S.no.	Activity	Time taken	Water evaporated	Observations
1	Sun and shade			
2	covered and uncovered			
3	Wet cloth			
4	Saltwater			

Observation Sheet for activity 12

Mixture	Components of the mixture	Method of separation	Basis of separation

Observation Sheet for activity 14

In the grid below, colour each square according to the following guidelines:

If it describes a waste of energy, colour the square **RED**. If it describes a way to save energy, colour the square **YELLOW**.

A dripping hot water faucet	A room with thermostat set below 68 F in winter	A house with poor insulation	Leaving lights on in an empty room	Driving in rush-hour traffic	Driving a hybrid car
Growing a garden	Using an electric blanket	Turning the TV off when no one is watching	Turning off appliances when on vacation	Car pooling	Using an electric can opener

A low-water landscape	Using fluorescent lights	Using lamps with 150-Watt bulbs	Driving a car with no other passengers	Leaving the faucet on when brushing your teeth	Taking showers instead of baths
Wearing sweaters and warm clothes in cold weather	Driving an oversized car	Riding your bike instead of taking the car	Using an electric toothbrush	Driving your car over 55 mph	Leaving outside lights on during the day
Opening curtains on the south side of the house during a summer day	Running full loads in the washing machine	Using solar thermal panels to heat hot water	Using both sides of a piece of paper	Closing windows and doors when the air conditioner or heat is on	Recycling cardboard and magazines
Leaving the car running in the driveway while you go inside	Using an electric knife	Hanging clothes outside to dry	Leaving the computer on when no one is using it	Recycling paper, glass and metal	Watching TV instead of playing outdoors

APENDIX D


Meristem Tissue
PLANT
TISSUE


Meristem Tissue
TISSUE


Meristem Tissue
TISSUE


Fish production


Meristem Tissue
PLANT