



HEM *harmonize*

SCIENCE

Grade VIII

Integration of Values

Teacher's Manual



Teacher Manual for Integration of Values in Teaching Academic subjects

By

HEMA Foundation, Mumbai

Teacher Manual for Integration of Values in Academic subjects

SCIENCE

Grade VIII

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First Edition: 2021

Publisher:

HEMA Foundation

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Preface



It gives immense pleasure to all of us at HEMA Foundation in presenting the “Teacher Manual for Value Integration” from Grade I to Grade X to our beloved teaching fraternity in school education. Teachers are the corner stones in building the huge edifice for the student community and they are the driving force and guiding spirit to the society. Little will change in the society, if the teachers do



not make any efforts. We are all living in a scenario where value systems need to be integrated and enhanced through essential school subjects so that the students assimilate values into their regular habits effortlessly. There may have been innumerable reasons why values from the society are disappearing, but there cannot be two opinions about the significance of educational institutions in restoring the culture and values of the society. When they say, ‘values are to be caught’, it is leaving a high degree of moral responsibility on the part of our teachers and this manual is our humble effort to lessen that burden for them. This manual is not a substitute to the academic teaching lesson plan, but is a supplementary assistance to the academic text. Nevertheless, the teachers are at perfect liberty to choose and aptly use the learning materials/activities wherever they find it relevant. This manual would be of great use to the teachers as they are written by practicing teachers in the school system and after thorough research and therefore, the general difficulties of teachers such as completion of portions in the given time to teach the subjects etc are taken care of. In fact, some of the lessons have been written after seeing their practical applications in actual classrooms.

We all have a responsibility of creating a society that is driven by values and our younger generation is the key change makers in the society. They all must be inspired by our educational institutions and their teachers so that their intellectual development is supported and augmented by the value systems and culture. HEMA Foundation takes it as a commitment to the society in participating in this huge endeavor. Inviting all the stakeholders to this venture of spreading and integrating values into the learning environment of schools, with all humility, we remain always your well wishers

Thank You,

Mahendra

Mahendra Kabra
Managing Trustee

Anita

Anita Maheshwari
Trustee & Creative Director

Acknowledgement

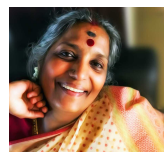
Welcome to HEMA Foundation's "Teacher Manual for Value Integration". I take this opportunity to thank each one of those who participated in it. At the outset I thank the Management of HEMA Foundation, its Managing Trustee Shri Mahendra Kabra and the Trustee and Creative Director, Smt. Anita Maheswari, for their unstinted support and cooperation in making this happen. Our humble pranams to the Senior most Member of HEMA Foundation Padmashree Shri Rameshwarlal ji Kabra, for his abundant blessings. The Associate Director Hetal Desai, the IT department Head, Shri Arvind Pandey, Shri Akash Shah and all other team mates from HEMA Foundation have contributed immensely toward realizing this manual.

There are several people outside the system who have supported this cause by giving their valuable comments and suggestions and my thanks are due to them as well. My sincere appreciations to the authors of this book who have been esteemed Principals, Section heads and Department heads and educators from reputed institutes of the country and they deserve the highest appreciation in envisaging the concept so well. My sincere appreciation to Dr. Shobana Nandakumar Nair, Mrs. Shobha Rajkumar, Mrs. Priya Cibi, Mrs. Sopna T. R and Rashmi Menon, for authoring the manual for Math, EVS, English and Science respectively. It was their untiring work and willingness to modify the documents as and when changes were required or further researches were needed, that this book was made possible.

As the Academic Director of HEMA Foundation and the person who has conceived this idea of value integration, I have gone through this document several times before presenting it to you and am fully aware of the significance of each word used in this document. I am sure the faculty who uses this manual would strictly adhere to the norms of the school Boards and the suggestions given over here. The Central staff of HEMA Foundation is more than willing to take your valuable suggestions and I promise that we shall be able to incorporate them if found suitable in our next publications.

I thank you for all your incredible commitment. All the credits if you find this document useful, would go invariably to all those who wrote the book and those who helped in the realization of the book and all those demerits if any, are purely due to my oversight. Believing that you would find it very useful in reaching out to the students and become inspiring teachers for our younger generations

I remain your sincere



Vijayam Ravi, PhD

Introduction

(must read before the teacher proceeds)

It's 'a Friday evening'. Everyone looks forward to a joyful weekend with family. After a weeklong work, it is a much-needed break. The school campus that was brimming with noises and screams of children, is silent and calm- The evening twilight has set in on the tall buildings, creating beautiful silhouettes. All have shut their tables; cupboards and the office of the school is closed. Principal and staff were slowly proceeding to the gate. They all wished each other a happy weekend. The peon is stepping out. Suddenly it happened. None expected the normal events that take place every day would take a turn so unexpectedly. School watchman came rushing to them to announce that there has been a riot in the city and he said he could see few students along with some other miscreants sabotaging public and private properties and hurting people on streets, hooting and howling. He added that it is not safe now to walk out. That the rioting group included their students as well. The miscreants included some of their old students too. And they were all those 'good' students when they were inside the school campus.

That left the teaching staff and the leaders stunned for a while. For a moment many of them looked at the school building just like that, which is their Almamater, and it stood so tall and elevated with a pride of creating thousands of glorious citizens in the past. Each one had a question mark in their eyes. None spoke. There was a dumb silence. Each one silently started replaying what they have been doing in the classrooms all along. There was an unbelief, inexplicable feeling reflected in their eyes. Did we make any difference to our students today? Did we teach our children to live or did we teach only Math, Science and language?

This is a serious question that all teaching faculty must ask themselves-

Did we teach subjects? Or did we teach children?

Professional standards for teaching academic subjects and transferring the right knowledge to the students have been the main objective of teaching all along, across the universe. All the latest teaching and learning revolutions that are happening in the classrooms and the students are evaluated for their skill development. Education is the vehicle for development of human being. Situations turned out to be grim when the pandemic engulfed the world with its outstretched arms. Every nook and corner of the world reeled under pressure with the pain and uncertainty that was caused by this pandemic. The ambiguity around, the uncertainty, complexity and insecurity around the schools was huge that none could fathom a way to come out of it. Teachers started looking toward blended learning in a hybrid classroom situation as a solution to reach students. All the more a reason for us, to do introspection about what we were doing till yesterday in the classrooms.

Yes, we taught our students Math, English, Languages, Social sciences, Sports, Music, Art and Craft and everything else-but values. We boasted ourselves as the top schools

with more students falling into the distinction list in terms of marks. Every year we sent out to the world, thousands of students with less skills and values but more of academics and marks. We were happy. Schools were happy. But we realize today that only some of those schools have been teaching students and not teaching subjects alone. Teaching subjects has a goal post and that is the academic credentials in terms of marks, but teaching students per say has another purpose altogether and that is -Touching their lives. We were confused and placing our balls in the wrong goal' posts. Result? The riots on the street, misbehavior, calamities, destruction, suicide and a valueless society in the making! Yes, certainly we imparted knowledge of academic subjects, however while this intellectual development is transmitted, there was room for us -the teachers for integration of values into these subjects. Few schools include moral science or value education in the curriculum and the teachers do teach the kids values like an academic subject and most of the schools assess the moral science in a written examination. It is very doubtful whether the students have really gained anything out of this process. Chances are bright that they end up considering the value education as just another subject. Teaching values through books was not a mistake, but assessing the children on marks was the issue. So, students when they completed their moral science examination, and received their 'pass marks', they quietly 'passed on' the values to the dustbins.

They say that the society's growth and degradation depend to a large extent the way the students are produced by the schools. The economic prosperity of a Nation depends to a large extent on living style and value systems of the society and there is every reason to believe that when the crime rate in a country goes high, the economic prosperity has declined in the society. The thinking, the culture of coexistence, working as teams and maintaining the art of tolerance, if these are removed from the society, it is very difficult to revive the Nation. India has been such a rich country with its values and it is a very painful scenario to watch how our younger generation is missing out on values. To a large extent the responsibilities can be passed on to the Macaulay's education system, parents and schools. If the schools make deliberate attempts to impart academic subjects and create excellence in that, the student's generation that gets molded out of the schools would certainly prove to be an asset in creating wealth and prosperity for the nation. However, if the schools do not impart values to the students, the nation will end up in a huge disaster after some time in terms of its moral fibre.. Wealth and success alone do not bring happiness to the society or an individual. Yes, it may bring some kind of satisfaction and one can always get a pleasure out of it. But very soon, this feeling becomes very transient and the mind would look for something else. This is human nature and it happens because the purpose of human life is not imparted to the students in schools. And when the assessment is done, that subject is also done.

Is this the purpose of education? Swami Vivekananda conceives education as the process where the innate potential of the human being is revealed. The innate nature of a human being is peace and joy. The riots on the street shows totally opposite virtues. Then where did the schools go wrong?

The riot on the street by students is not the debate here. It may be right or it may be wrong. The question is of larger dimension. It is of citizenry, safety, security and morality of a Nation, of the Globe! But why does such a behavior happen? Why do our students or our citizens behave in such an unruly manner that is a pain to others? When did our children or our citizens who passed out of the portals of our school, become so very intolerant? What is the fundamental cause for such an unrest in the minds of students, or generally speaking mankind as a whole? The intellectual quotient is very much in place. But when the spiritual quotient and emotional quotient are misplaced, the human beings sometimes behave weirdly. They lose cool, the power to think and act. Most often human beings react.

Did we, at schools, teach our students to act, or react?

Did we, at schools, teach the students values? Or imbue values in them?

Did we teach the students only subjects? Or did we touch their lives?

The Context to Value integration with subjects:

It is in this context of these questions, that the thought of integrating values with academic subject teaching dawned. Education and values are no two different subjects. They are mutually interwoven. As a teacher, the biggest role is to prepare their students behave like human beings with all values intact. All academic subjects may give them an opportunity to excel in life, but the values learnt help them to live as human being. Since the teacher is an integral part of education and the inspiration in the life of the children, they have to turn toward integrating values while they teach subjects. Value integration does not mean quoting a value and discussing it, rather it is an effort to lead the students to see a personal meaning in whatever the teacher teaches in all subjects. It depends to a large extent on the creativity of the teacher to highlight the value that is hidden in all subjects, including the languages. Value means a person's personal principles or standards of behavior the judgement of how important that value is to him in his life. In nut shell we can say, "Value is a preferential behavior". What the teacher needs to do in class is to help the kids choose 'his/her preferential behaviour'

The fundamental shift that needs to happen here is this.

At the centre, is the value and all subjects are contributing to the stabilization of the value. Therefore, the teaching has to be intertwined with those values from the subjects and the teachers reach to the students in a very subtle way. Each Subject-be it Science, Math Or languages, or social science, or Non-academic subjects, have got something very fundamental to convey to the people who spend time to learn those subjects. And if we look at those subjects from a very objective perspective, we can clearly see what they are all dying to convey to the children. Math talks about precision, value of time, sharing caring, multiplying happiness and joy and several likes. Science talks about hard work and resilience and the will power to fail and still work hard to achieve. Languages give the

feelings of expression, love, compassion and what not. So, when a student goes out of the school portals, he would have assimilated within him values like precision, punctuality, rationality, truth, compassion, love, caring, sharing, determination, courage to fail, spirit of enquiry et etc. Along with similar such values, the content gets learnt by the kids.

What benefits do Value integration bring to the students?

1. The students acquire several time honoured personal and collective values for life
2. Along with the cognitive development assured by modern education, integrating values in academic subjects prepares the children to develop their social and emotional lives
3. The approach of integration of values in teaching subjects, help the students enrich students' intellectually, physically, socially, morally, spiritually and artistically.
4. Schools can witness more of academic diligence with students showing increased attentiveness in the classroom and show capacity to do independent work
5. The school ambience also will see less of conflicting situations as the students start demonstrating greater empathy and responsibility
6. The student teacher relationships drastically improve and it becomes more trusting
7. Students feel a sense connectivity with others and belongingness

The argument

Teachers are the crucial ingredients in getting the values incorporated into the system and there is no two way about it. At present teachers are focused on completing their lessons on time amid all challenges and they do not have the extra time for doing any research for incorporating the lessons with values. Education and imparting values are no two different subjects. They are one. Additionally, thrusting a subject of value addition always attracts criticisms, primarily from the teaching community since they believe that it is an additional work and have to prepare more.

This argument is in place and cannot be ruled out and that is why HEMA foundation pitches in for help.

What does HEMA foundation offer to teachers?

This particular attempt from HEMA Foundation is to address this conflicting issue in education. HF is striving to reach out to teachers with ways and means to incorporate or integrate values while they teach academic subjects so that additional burden is not on them, while they address a major concern of education.

Values can never be taught, values can only be caught

Every subject has material knowledge that is needed for existence. What goes unnoticed more often is the subtle knowledge that the subjects try to convey. Any subject-Language, Math or science-all stand there for spreading virtues and values alongside the material knowledge. It is an integral part of learning the subject.

How and why are the values integrated by HF?

There is a very sound reason for HF to adopt the project of value integration into academic subjects and it is justified when any one reads the deliberations made in the NEP-2020 -NEP talks passionately about the integration of values, skills, and essential subjects to make the learning holistic. Let us refer to the clause 4.28, and it reads as follows: “Students will be taught at a young age the importance of “doing what’s right” and will be given a logical framework for making ethical decisions. In later years, this would then be expanded along themes of cheating, violence, plagiarism, littering, tolerance, equality, empathy, etc., with a view to enabling children to embrace moral/ethical values in conducting one’s life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. As consequences of such basic ethical reasoning, traditional Indian values and all basic human and Constitutional values (such as seva, ahimsa, swachchhata, satya, nishkam karma, shanti, sacrifice, tolerance, diversity, pluralism, righteous conduct, gender sensitivity, respect for elders, respect for all people and their inherent capabilities regardless of background, respect for environment, helpfulness, courtesy, patience, forgiveness, empathy, compassion, patriotism, democratic outlook, integrity, responsibility, justice, liberty, equality, and fraternity) will be developed in all students.”

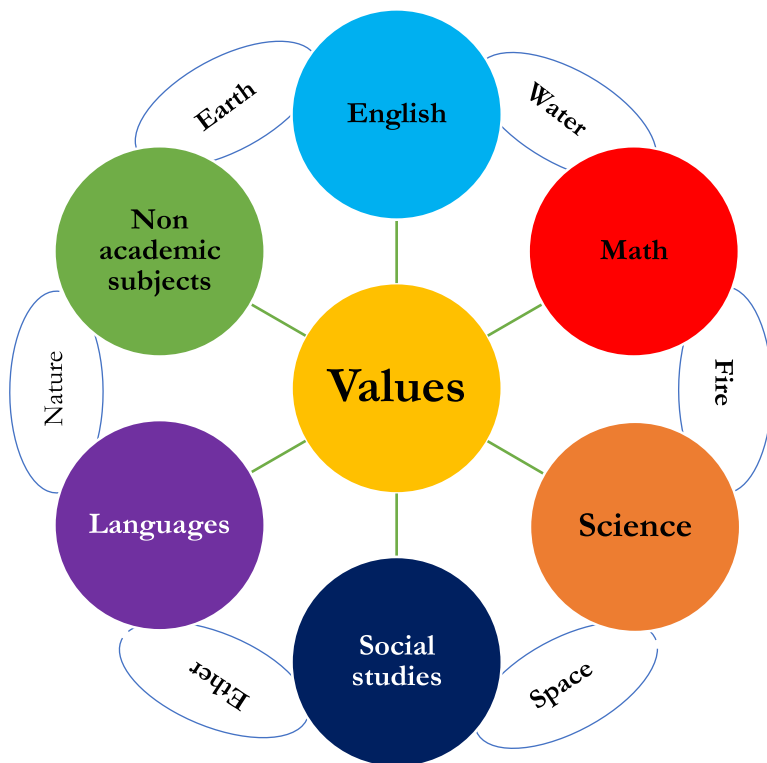
The new NEP and therein the NCERT insist on integration of values with essential subjects. Nature is the mother of all knowledge- Every learning that takes place with human beings is connected through the mind and intellect. While giving food for thought at the intellectual level, teachers have to supplement the emotional aspect through developing the mind. Mind develops by seeing, observations and hearing from sources that make sense to it. Human brain and human mind need to go hand in hand to make rational decisions and emotional attachments. If there are no emotions to any material knowledge learnt, it will remain a subject only. The love for the subject comes, when one extrapolates it to the application of it both at the material and emotional level. The emotional intelligence that gets originated while an academic subject is being taught is as powerful as the academic learning. Because it signals imagination and creativity and these are faculties associated with the mind. The rational brain which is provided with intellectual information about the academic subjects processes the knowledge with the help of the emotional brain-which is the mind. When no food is given to the emotional brain, it gets impoverished. Therefore, a balancing act needs to be done by teachers while imparting knowledge on academic subjects to incorporate the value or virtue that the subject is trying to convey to the reader or learner.

While the teacher teaches a topic ‘Patterns’ in Math, remember that the teacher has to touch the value of precision, discipline and punctuality. The whole universe gives us innumerable patterns and they all follow a certain order. That order brings discipline and it helps you see things in the right perspective. Similarly, the teacher, while discussing about geography, and earth in particular, what can be brought out is the virtue of evolution and the stability given by the earth. Earth is an evolved planet. The innate stability, the order, the growth and silence involved in this process are all virtues that can

be imparted to the students. On similar lines, the ecosystem, the biology, atmosphere, the plants, animals, air, water, aesthetics, and beauty-all talk about values and virtues of truth, tolerance and love, coexistence, interdependence, compassion and honesty.

Integration of values with academic subject teaching is an effort of HEMA Foundation to reach to the teachers with the varied ways of dealing with academic subjects and making it very interesting for the students to learn.

Whom does this manual serve?



The next thing that HF is trying to incorporate is Skills along with values. Skills are also considered to be an integral part of learning and hence while a value is highlighted the skills are also touched upon.

The additional advantage that teachers who use this manual of HF is that, the chart of the flow of lessons can be as such adopted in real teaching sessions without the need for doing a lesson plan again. The pattern of a school lesson plan used for imparting academic session is given incorporating the values integrated in it.

The perfect way of starting an academic lesson in a normal classroom situation so that the students get glued to the teacher's skills of teaching, is assured in the manual

through a context text-either by way of a story or an activity or discussion that rouses the interest of children

The description of the lesson ends with assignments for doing individually, at home or in class and this comes as a huge relief for the teachers

There is also a descriptive summary in the beginning of the text manual where in the topic, the core values, the skills and the activities that can be done and also the materials required for the same are all given so that the teacher gets a quick idea about how to go about the same.

HF, thus, is trying to travel that path of imbibing values to children along with the teachers!

Organization of the manual-How to read the manual?

The teacher will have to read and understand the manual as follows:

This teacher manual follows a certain structure that is not replacing the academic journal of the teacher. On the contrary, serves as an additional support as to how the teacher can link those values that are very relevant for a human life with the teaching of the subjects.

It has two parts:

A descriptive summary: this is a sheet in the beginning of each manual, showing what are the core values, sub values and skills that are linked with the topics and describes what activities can be undertaken to teach the values through subject integration and also shows what all education materials are required. Teacher has to glance through this to get a fair idea about how many values are integrated in total and understand this part first

The second part is the actual manual where the method of integration is dealt with the main academic concept.

The structure of the manual goes as follows: Start reading from introduction

1. **Introduction:** This gives what the lesson is about and what values, skills can be integrated here and the significance of it
2. **Learning objectives:** This plan talks about what are the academic and value driven objectives of learning the lesson
3. **Process and Action:** Here the way how the lesson has to be undertaken and it is shown in the form of a flow chart for quick understanding mentioning the activities at each stage. It starts with the context which actually serves as the introduction of the class to the new topic.
4. **Activities and related discussion:** Here the activities are dealt with in detail with discussion questions that lead to both academic and value driven integration. It is through these the teacher is able to deliver the total lesson effortlessly.
5. **Assignments:** Gives assignments that can be done individually, at home, or as group in the class.

The activities given can be chosen by the teacher as and when needed or as per the time available. It is not mandatory that the teacher does all activities.

Conclusion:

It is a proven fact that any particular value learnt becomes a habit when one practices it consistently. The purpose of integration of values with academic subjects is to learn the values along with the academic concepts and so whenever the academic concepts are tested, the value learnt is reiterated. The creativity and imagination of teacher make the lessons interesting to the students and HEMA Foundation presents this Value Integration Teacher Manual for the benefit of the teaching and student community.

Jai Hind

Conceived and presented by

Vijayam Ravi, PhD

Academic Director

HEMA Foundation

"वसुधैव कुटुंबकम्"

Vasudhaiva Kutumbakam ("vasudha", the earth; "iva", is ; and "kutumbakam", family). This Sanskrit phrase literally translates to mean that the whole world is one single family. The Sages have said that the entire world is truly just one family connected with thoughts, emotions, humanity and humility.



सर्वे भवन्तु सुखिनः सर्वे सन्तु निरामया ।
सर्वे भद्राणि पश्यन्तु मा कश्चित् दुःखभाग् भवेत् ॥

May all be prosperous and happy. May all be free from illness.
May all see what is spiritually uplifting. May no one suffer in anyway.
Om peace, peace, peace.



Vision

We aim to cultivate a conscious understanding of human values in individuals in order to help them coexist peacefully and harmoniously.



Mission

Our mission is to awaken the spirit of value based living in all individuals at school, organizational and community levels through well researched and structured programs resulting in a responsible, effective and harmonious existence for all



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Unit 1

Topic	Values / Life skills integrated & imbibed	Activities
Crop Production and Management	<p>Core Values Considered : Self Development and Interdependency</p> <p>Other Sub Values: Adaptability, Empathy and Patience</p> <p>Life Skills: Critical thinking and decision making</p>	<ol style="list-style-type: none"> 1) Finding out the growing period of the various crops to understand the value of patience. 2) Finding out the various climatic conditions in which the crops grow to understand the value of Adaptability 3) Find out the main crops growing in different continents and find out their import export potential scenario and make a graph to understand the value of Inter-dependency 4) To prepare a journal of important qualities learnt from each of the sub-topics aiming at a Self-development program. 5) Conduct a food drive to develop Empathy

Materials / Resources needed

1) Pen, Pencil, Eraser, Scale, Chart papers, printouts, multimedia and internet wherever required

2) NCERT text books of Class VIII

Description (of the points of discussion)

- To understand the value of preparation of soil for sowing purpose
- To learn the value of irrigation and adding manure and fertilizer
- To learn the importance of protection of plants from weeds
- To understand the importance of harvesting cycle, storage and distribution in crop production and management.
- To inculcate the value of Patience and Adaptability.
- To learn the values of Interdependency
- To understand the value of imbibing good qualities and self development
- To help children develop Empathy

Unit 1**Crop Production and Management****Patience, Adaptability, Interdependence, Self-development and Empathy****I. Introduction**

The current population of the world is about 7.8 billion people. To feed such a large population, obviously, there is a lot of demand for food. To fulfil this requirement, we need crop production and management. Ensuring that all the people of the country are provided with food at all given point of time without fail, is a mammoth task and the Food Corporation of India along with the farmers ensure this by crop production and management..

Cultivation of crops requires several agricultural practices undertaken by the farmers. like Preparation of soil, Sowing, adding manure and fertilizers, Irrigation, protecting from weeds, Harvesting, Storage and Distribution.

Through the above topics the teacher can try and introduce the human values of Patience, Adaptability, Interdependence, Self-development and Empathy.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value-based goals:

- To understand the value of preparation of soil, for sowing purposes.
- To learn the importance of irrigation and adding manure and fertilizers.
- To learn the importance of protection of plants from weeds.
- To understand the importance of harvesting cycle, storage and distribution in crop production and management.
- To inculcate the value of patience and adaptability.
- To learn the virtues of interdependency.
- To understand the value of imbibing good qualities and self-development
- To help children develop empathy

III. Process & Action Plan

The teacher can introduce various chart activities in the class, for growing period of crops so as to help students understand the value of Patience, a chart of different climatic conditions in which the crops grow, to introduce the value of Adaptability and graphical study of import and export of crops to make them understand the value of Interdependency. The children can create a small self-development journal showing different attributes which will help them to develop into a better individual or the class can undertake the activity of donating food to the needy, which will help them to understand that they should not waste food and to inculcate the value of Empathy.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Visit to a farm for practical understanding of the crop growing process



B. Carry out the activities, given below, as per convenience.



1. Patience

This activity is related to finding out the **growing period** of the various crops, helping students to understand the value of patience. Ref. B1

2. Adaptability

In this activity children note down the **different climatic conditions** in which the various crops grow, which helps to understand the value of adaptability. Ref. B2

3. Interdependency

A small exposure to **import and export** of food of various continents can help the children understand interdependence among various nations. Ref. B3

4. Self- Development

This activity is aimed at self-development through **each sub topic** of the unit of crop production and management. Ref. B4

5. Empathy

Food Drive: This activity of preparing and **donating food** can help develop empathy in children. Ref. B5



C. Aid generalization of the concepts learnt through assignments (given below)



1. To maintain a personal Health Journal. Ref. C1

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** of Application of **Knowledge** and **Action** to develop the values embedded in the topic.

The core values being considered are **Self- development**, and **Inter dependence** along with other sub-values like **Patience, Empathy** and **Adaptability**.

The unit also provides the scope to develop the following life skills in the students, like **Critical thinking** and **Decision making**.

IV. Activities & Related Discussion

A. During the context activity of introducing the topic of Crop Production and Management, teacher can either take the students to visit a farm or ask they can be asked to visit their village or any farm, on their own, and observe the crop growing cycle.

This activity will help them to get hands on experience regarding the topic and help them to understand that in life too, there is a process for any development and it takes Efforts, Skills and Perseverance to achieve something.

B1. To imbibe the value of Patience the children can do the activity of identifying at least 15 crops, 10 vegetables, 5 pulses and cereals and write down their **growing periods** in a tabular format and display it in the class. An example of the chart is given below:

Sr. No.	Vegetable	Growing period
1.	Beet Root	80 -90 days or 3 months
2.	Cabbage	90 to 100 days / about 3 months
3.	Carrot	80 to 90 days / about 3 months
4.	Cucumber	50 to 70 days / about 2 ½ months
5.	Onion	150 to 160 days / about 5 months
6.	Tomato	110 to 120 days / about 4 months

Activity: Ask the children to grow any one vegetable and observe and record the growing period.

B2 To understand the value of Adaptability children can do the activity of taking the same 10 crops and noting down the different Climatic conditions they require to grow. An example of the chart is given below:

Sr. No.	Vegetable	Growing period
1.	Beet Root	Germination temperature 10°C- 30°C – Sept, Oct., Nov
2.	Cabbage	Germination temperature 10°C- 20°C – Sept, Oct. Nov
3.	Carrot	Germination temperature 10°C- 30°C – Aug Sept, Oct.
4.	Cucumber	Germination temperature 16°C- 32°C – All seasons
Refer internet link – allthatgrows.in		
This activity will emphasise that only when the plants adapt to its environment it will survive, thus teachers can emphasise on how adaptability and flexibility is important for survival.		

IB3. Divide the students to represent 7 continents and ask them to make charts with of type of food grown in the different countries of those continents and find out what gets **exported** and what gets **imported**, in order to understand how different countries are interdependent on each other for various food items. Eg: Spice exports etc. This will help them understand the value of **Inter dependence**.

B4. For **Self-Development** let every child undertake this activity after the teacher has finished teaching this topic. Let them make two columns in a notebook. In one column they write the agriculture process and opposite that they write the value that they have learnt from the process. Given below are guidelines for the teachers.

PREPARATION OF SOIL/ FLEXIBILITY, ADAPTABILITY LEADS TO STRENGTH

Let us take the first agricultural practice taken in the text book, which is, Preparation of soil. While teaching the topic of preparation of soil, the teacher could stress on how properly prepared and aerated soil helps the plant to grow strongly and properly. They could stress on development of a strong foundation for growth of the person. **Correlating the topic of soil aeration to developing flexibility in children, which can lead to adaptability and correlating preparation of soil to creating a strong foundation, can be done by the teacher, while teaching this topic.**

SOWING GOOD QUALITY SEEDS/ IMBIBING GOOD QUALITIES:

The next topic in agricultural practices is sowing – This requires a selection of good quality seeds for getting a good crop yield. **Teachers could correlate this topic to how the children must focus on inculcating Good qualities in themselves in order to develop into excellent individuals.**

ADDING MANURE AND FERTILISER/RIGHT ATTITUDE:

This topic could be correlated to how the right things that they pick up from their school environment, home environment and their friends could act as fertilizers and manures to make them grow into beautiful individuals. **Choose your friends wisely, make the best use of what you get etc.**

IRRIGATION/PRECISION:

The teacher could emphasize on how the right amount of water is important for every plant to grow and similarly how the right skill development and precision in life could be one of the most important qualities to develop. **Everything in the right measure**, in life, could develop the children's life beautifully. Emphasize on right measure of fun and responsible behavior, as well.

HARVESTING/ AS YOU SOW SO SHALL YOU REAP:

This is the final fruit the farmer receives after nearly 6 months of hard toil and methodical working. Likewise teachers could emphasize that if children focus on developing the correct values, they would also reap its reward in their life.

STORAGE AND DISTRIBUTION/ PLANNING AND MANAGEMENT SKILLS:

Teachers could discuss the value of long term planning via the point of storage and management skills required, through the topic of distribution.

B5 Organize a **Food Drive** wherein the class is divided into groups and prepares and distribute food to any needy person or organization, thus developing the value of **Empathy**.

V. Assignments

C1 Every child can maintain a '**Health Journal**' wherein he/she notes down his or her food being taken on the basis of their liking versus its nutrient value, helping them understand whether after all the effort that goes into preparation, production and management of food, are they getting a wholesome diet or do they end up wasting food.

Resources

References: internet link – www.allthatgrows.in

Resources for Teachers:

Book: NCERT Class VIII Science text book

Topic	Values / Life skills integrated & imbibed	Activities
Micro-organisms - Friend or Foe	<p>Core Values considered: Tolerance and Problem Solving</p> <p>Other Sub Values: Inter-dependency and Empathy</p> <p>Life Skills: Inter-personal skills, Sharing and Caring</p>	<ol style="list-style-type: none"> 1. Potluck Activity: Preparation of different food items by Children coming from different regions to foster the value of Tolerance 2. Symbiotic Activity: Ask the child to make a list of all things for which he or she depends on others. E.g., Parents, Teachers, Society. This will help them understand the value of Interdependence and Symbiotic relationship 3. Vaccination :The topic of Vaccination against Microorganisms can be co-related to the development of long term Problem Solving skills. One of the examples can be an activity of Cooking undertaken with the purpose of learning an important life skill and building immunity through healthy cooking. 4. Visiting an old age home or orphanage can be undertaken as an activity to develop empathy amongst children and make them understand the value of giving back to the society.

Materials / Resources needed

- 1) Pen, Pencil, Eraser, Scale, Chart papers, printouts, multimedia and internet wherever required
- 2) NCERT text books of Class VIII

Description (of the points of discussion)

In this chapter we learn about Microorganisms and their related topics. The topics covered are as follows

- To understand where microorganisms live
- To analyze the effects of good and bad microorganisms
- To understand the commercial and medical use of microorganisms.
- To learn the importance of vaccination.
- To understand symbiotic relationship through Nitrogen fixation
- Children can learn the value of Tolerance through the topic 'Where Microorganisms live'.
- Children can learn problem solving skills through the topic of Vaccination.
- Children can learn the value of Empathy, Mutual help and Appreciation through the topic 'Symbiotic relationships'.

Unit 2**Microorganisms - Friend and Foe**
Tolerance, Interdependency, Problem Solving, Empathy**I. Introduction**

Life on Earth has been continuously changing. The living organisms of today are different to those that existed millions of years ago. Evolution has occurred. This means that over a long period of time, organisms have changed gradually to form new types. Those types of organisms which cannot adapt die out and become extinct.

Microorganisms are seen to survive in various conditions of extreme heat and cold. They are present at a number of places with different functions, sometimes useful, sometimes harmful. In case of improving soil fertility, microorganisms like *Rhizobium* living in the root nodules of leguminous plant help to convert atmospheric Nitrogen into Nitrates and Nitrides, exhibiting a symbiotic relationship.

Therefore through this Unit the core values of Tolerance, Interdependency, Problem solving and Empathy can be fostered in children.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value-based goals.

- To understand where microorganisms live.
- To analyse the effects of good and bad microorganisms.
- To understand the commercial and medical use of microorganisms.
- To learn the importance of vaccination.
- To understand symbiotic relationships, through Nitrogen fixation.
- Children can learn the value of Tolerance thorough the topic ‘Where Microorganisms live’.
- Children can learn Problem solving skills through the topic of ‘Vaccination’.

- Children can learn the value of Empathy, Mutual help and Appreciation thorough the topic ‘Symbiotic relationships’.
- Express gratitude for things and people who have contributed to their happiness.

III. Process & Action Plan

Microorganisms live under different conditions which can be co-related to developing the value of ‘Tolerance via a Pot luck activity, in recess time. Symbiosis in microorganisms can be used to understand the value of Mutual help or Interdependency. Also a few values like Long-term Problem-solving skills and Empathy can also be inculcated through this chapter.

The values and life skills integration within this Unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Let the teacher take a drop of curd and prepare a slide and show it under the Microscope (Refer A)



B. Children can carry out this activity individually, in pairs or in groups



1. Tolerance

The topic “Where Microorganisms live” (extreme conditions) can be correlated to the value of Tolerance, which can be taken up by the teacher in the **class** by doing “Pot luck activity. Ref B1

2. Inter-dependency

The topic of Symbiosis in micro-organisms can be correlated with this activity which will make the children think how interdependent they are on the society, their parents and their teacher. – Ref B1

3. Problem Solving:

The topic of “Vaccination” can be correlated to long term problem solving skills and this activity will help them identify their skills and develop positivity. Ref B3

4. Empathy

The activity of visiting an old age home or an orphanage will encourage them to think for others and develop empathy. Ref B4



C. Aid generalization of the concepts learnt through assignments (given below)



1. Home assignments can be given to students for making them understand the value of symbiotic relationship. Refer C1

While it would be ideal to expose the students to all the activities, as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** - Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The core values being considered are **Tolerance** and **Problem Solving** along with other sub-values like **Interdependency** and **Empathy**.

The unit also provides the scope to develop the life skills in the students: like **Inter-Personal skill development, Sharing** and **Caring**.

IV. Activities & Related Discussion

A. During the context activity of introducing the microorganisms by viewing them under the microscope, **teacher can emphasize on the fact that many things are not visible to us on the surface, but with correct magnification and focus, it can be brought into our view.**

Similarly, in life too, developing yourself superficially is not enough, instead every child must introspect and develop, along with values which may not be naturally present but can be ingrained through self-awareness and proper training and guidance.

B1. The seed for the thought of **Tolerance** can be sown in the mind of the children while taking the topic of “Where microorganisms live”. Micro-organisms survive in extreme conditions like hot spring and frost. Thus for weathering various extreme conditions children need to develop **Tolerance**. In this activity the teacher can aim at making every child understand the importance of developing **various skills** for them to adapt to a world, where they would have to become independent as a growing individual.

POT LUCK ACTIVITY

Here’s a fun project that you can use to explore tolerance without getting too preachy: have everybody bring in one of their family’s traditional food items. A South Indian student may bring in Idli / Dosa while a North Indian student brings in their mom’s trademark homemade Parathas.. What may surprise your students is that some of their favorite foods come from other states, while there are people of the same skin color, right in the same classroom, whose families make food that they’ve never seen in their lives. Culture is a wide and varied thing, it goes well beyond regional boundaries, and this is a great way to teach people to relish that difference.

The only way to combat intolerance is to encourage people to work together with one another. If you allow isolation to exist in the classroom, then certain linguistic instincts will take over. Seat students beside students of different regions and cultures and above all else, get conversation going between all of your students.

B2 The seed for the thought of valuing **Inter-dependency** can be sown in the mind of the children while taking the topic of “**symbiotic relationship** in microorganisms” by the teacher. This is an individual activity to be undertaken by every child in the class, where in, each child will make a list of all activities for which he or she is dependent on others.

For example, the child is able to lead a smooth life as his/her mother prepares and serves food, school fees are paid by the parent, the child is able to understand and gain knowledge in various subjects, thanks to the teachers and school etc. The teacher can also emphasise on how we are dependent on the farmers, transporters and so many other people in the society for the smooth functioning of our life.

Activity: Research how dependent you are on other people for the smooth functioning of your life.. Make a list of all activities that you depend on others for.

The aim is to sow a thought in the mind of each child on how much they are inter-dependent on others and value it and make them think what they can do in return, for the society.

B3. In the topic of “vaccination against microorganisms” the teacher can help sow a thought regarding how in adverse conditions, the human mind thinks up of long term and viable solutions to a problem. The aim of this activity would be to make them think and help them develop **Problem Solving** skills which will positively enhance their life.

Activity: Let the child identify various areas in which he / she needs to develop and learn one life skill over the period of whole year, (on Sunday). Maintain a **Journal** mentioning the date, time and the activity. E.g. cooking

B4. In the effort to make the children understand how they can help others and feel joyful, the teacher can aim at developing the value of Empathy in them as he or she goes through the topic of symbiotic relationships in microorganisms. This should preferably be a group activity undertaken with the help of parents and teachers.

Activity: Visit an **Old age home** or an **Orphanage**. Students can do any activity to make the people of these institutions happy.

This will help children help to understand how their little time and effort can make a

difference in the life of others who are less privileged.

Here the concept is that while doing every activity the child understands that he or she is being helped by their nation, society, friends, parents and teachers etc. to make their life run smoothly. When they do various activities to help them in return, it becomes a symbiotic relationship and this improves the quality of life of people around them along with developing various skills in them.

Requirement: Chart paper, note book and writing material.

Kindly ask the child to take help from their parent, friends or teachers wherever required.

V. Assignments

C.1 Make a chart on Symbiotic activities undertaken by you. Write an essay on how Symbiotic relationships build mutual appreciation and understanding and makes life smoother. Did learning about values through the unit of microorganisms help you to develop empathy and sensitivity towards others? Discuss in class.

Maintain your own VALUE JOURNAL.

Resources

References: The Resilient Educator - Internet

Book: NCERT Class VIII Science text book

Unit 3

Topic	Values / Life skills integrated & imbibed	Activities
Synthetic Fibres and Plastics	<p>Core Values considered : Unity, Simplicity and Environmental Awareness</p> <p>Other Sub-Values: Social Responsibility and Love for the country</p> <p>Life skills: Creative and Artistic skills..</p>	<ol style="list-style-type: none"> 1. This is a demonstration activity that can highlight the importance of unity 2. This is a demonstration which teaches the importance of preserving the environment and make children aware of their social responsibility. 3. Poster making activity that advocates simplicity to avoid waste generation. and also enhances creative and artistic skills..

Materials / Resources needed

- 1) Paper clips and rubber bands
- 2).NCERT text book class VIII

Description (of the points of discussion)

This chapter discusses about the various types of synthetic fibres, their characteristics and their uses. This chapter also touches upon the environmental impact of using plastics which are non-biodegradable and how to minimize the environmental hazards due to the usage of plastics.

The topics discussed are

- How to differentiate between natural and artificial fibres and how they are made and their characteristics.
- Know about the different types of plastics and their characteristic properties.
- Realise the negative impact of plastic waste on the environment and why we should avoid using plastic as much as possible.
- Appreciate the importance of unity while learning about how simple chemical molecules join together to form a strong fibre.
- Realise that plastic is non-biodegradable and it is our responsibility to reduce the use of plastic and thus save the environment.
- Understand that we should lead a simple life , avoiding unnecessary waste generation which helps to reduce the negative impact on our environment.

Unit 3**Synthetic Fibres and Plastics**
Unity, Simplicity and Environmental Awareness**I. Introduction**

We know that the most basic needs of human beings are food, clothes and shelter. The clothes we wear are made up of fabrics that are either natural or manmade. Most of the synthetic fabrics are polymers made of molecular chains. This chapter discusses about the various types of synthetic fibres, their characteristics and their uses. This chapter also touches upon the environmental impact of using plastics which are non-biodegradable and how to minimize the environmental hazards of such usage.

While learning about how simple chemical molecules join together into strong chains to form synthetic fibres, children can be made aware of the importance of unity and how unity provides strength. This chapter also helps to inculcate environmental awareness and social responsibility in the minds of children. By reducing the use of non-biodegradable substances and recycling and reusing whatever possible, they can be developed to become good citizens of our country. Another aspect which can be highlighted is the need for simplicity in life, resulting in generation of less waste.

The core values focused upon are *Unity, Simplicity and Environmental Awareness* along with sub values such as *Social Responsibility and Love for the country*.

II. Learning Objectives / Outcomes

Through this unit, students will achieve the following grade appropriate academic and value based goals.

- Differentiate between natural and artificial fibres and how they are made.
- Learn about various types of synthetic fibres like rayon, nylon, polyester etc and their characteristics like strength, water absorbing capacity, burning characteristics etc.
- Know about the different types of plastics and their characteristic properties.
- Realise the negative impact of plastic waste on the environment and why we should avoid using plastic as much as possible.
- Appreciate the importance of unity while learning about how simple chemical molecules join together to form a strong fibre.

- Realise that plastic is non-biodegradable and it is our responsibility to reduce the use of plastic and thus save the environment.
- Understand that we should lead a simple life, avoid unnecessary waste generation which would help to reduce the negative impact on our environment.

III. Process & Action Plan

Teacher gets an opportunity to inculcate values like unity and simplicity through this topic. An awareness on how important it is to protect the environment can also be inculcated in the minds of children .

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1.Unity

This is a demonstration activity that can highlight the importance of unity. Refer B.1.

2.Environmental awareness and Responsibility

This is a demonstration which teaches the importance of preserving the environment. Refer B.2.



3.Simplicity

Poster making activity that advocates simplicity to avoid waste generation, and also enhances creative and artistic skills.Refer.C.1.

While it would be ideal to expose students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered *Unity, Simplicity and Environmental Awareness* along with sub values such as *Social Responsibility and Love for the country*.

The unit also provides the scope to develop the following skills in the students like *Creative and Artistic skills*.

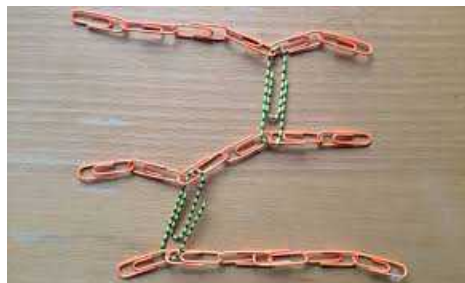
IV. Activities & Related Discussion

A. Teacher can introduce the lesson by discussing with the students about their favourite dresses and the materials they are made up of. Teacher can discuss about the advantages and disadvantages of the different types of fabrics and why some fabrics are preferred during some seasons.

B. Activities:

B.1. Teacher can ask the children to make chains using paper clips and rubber bands to understand how simple molecules join together in chains to form synthetic fibres.(A sample is given below).

Through this activity teacher can highlight the importance of unity .The simple molecules got transformed into strong fibres by uniting together. Likewise if we stand united we can become a strong nation. This activity can sow the seeds of national pride and love for the country in the minds of the children.



Things needed: Paper clips and rubber bands..

B.2. Teacher can ask students to bring samples of different fabrics to the class. They can try to differentiate between natural and synthetic fibres. Children can be asked to list down the characteristics of each type of fibre in their notebooks. Teacher can point out that though they have very good characteristics, synthetic fibres are not bio-friendly. It is always better to go the natural way as far as possible, if we want to protect our environment.

V. Assignments

C.1. This is a poster making activity which the children can do as a home assignment . Children can be asked to make a poster on the topic “ SAY NO TO PLASTICS”. This activity will help them to think about the adverse effect of plastics on the environment and the steps to be taken to reduce plastic pollution. Children can also be urged to reduce the use of plastic materials by leading a simple life and following the 3 R’s - Reduce, Reuse and Recycle. One should only possess what is essential and not to go after extravaganza .For e.g. always try to avoid buying new pens and use the older ones by replacing the refills. This will reduce plastic waste generation and would help to reduce the load on our environment. This activity also would help to enhance the creative and artistic skills of children.

Resources

References:

- NCERT Class VIII Science Textbook.

Topic	Values / Life skills integrated & imbibed	Activities
Metals And Non-Metals	<p>Core Values considered : Self-Respect, Adaptability and Inner peace and harmony</p> <p>Other Sub-Values: Hope, Positivity and Inner strength.</p> <p>Life skills: Curiosity and scientific inference skills..</p>	<ol style="list-style-type: none"> 1. This is a demonstration cum discussion activity that can highlight the importance of adaptability that helps one to cope up with difficult and adverse situations 2. This is a demonstration which teaches the importance of keeping calm like non-reactive metals to ensure inner peace.It also highlights positivity and hope. 3. This is a clue card making activity for a guessing game which helps to inculcates values like self respect and also enhances curiosity and scientific inference skills.

Materials / Resources needed

- 1) A metallic hair pin and a pencil lead.
- 2).NCERT text book class VIII

Description (of the points of discussion)

This chapter elaborates on the characteristics that differentiate metals and non-metals and also their chemical reactions with some substances.

The topics discussed are

- Differentiate between metals and non-metals based on their characteristic physical properties like malleability, ductility, sonority and conductivity.
- Know how metals and non-metals react with oxygen, water, acids and bases.
- Describe the various uses of metals and non-metals
- Learn how to keep the mind calm for the sake of inner peace and harmony by being unreactive to situations like some metals.
- Realise that adaptability is an important virtue that helps one to cope up with difficult and adverse situations.
- Understand that self-respect is an important quality in life. One should know about his/ her qualities and should retain those qualities and remain unique just like some metals are unique in their properties and cannot be substituted with any others.

Unit 4**Metals And Non-Metals****Self-Respect, Adaptability and Inner peace and harmony****I. Introduction**

There are countless materials surrounding us. Each material has a special feature that makes it unique from others. Some materials are hard, others are soft, some break easily while others do not. Some materials can carry electricity and heat better than others. This chapter elaborates on the characteristics that differentiate metals and non-metals and also their chemical reactions with some substances.

Through this chapter teacher can highlight the importance of keeping calm for achieving inner peace and harmony. Like some metals that remain inactive, one does not have to react to every situation. Teacher can advise students to be adaptable to various situations, just like some metals which are ductile and can be molded into any shape. It can also be pointed out there may be some qualities that makes one unique, and one should be proud about it, similar to some metals which are unique and cannot be substituted for their qualities with anything else. This comparison helps children to understand the importance of self-respect.

The core values focused upon are Self-Respect, Adaptability, Inner peace and Harmony along with sub values such as Hope, Positivity and Inner strength.

II. Learning Objectives / Outcomes

Through this unit, students will achieve the following grade appropriate academic and value based goals.

- Differentiate between metals and non-metals based on their characteristic physical properties like malleability, ductility, sonority and conductivity.
- Know how metals and non-metals react with oxygen, water, acids and bases.
- Describe the various uses of metals and non-metals
- Learn how to keep the mind calm for the sake of inner peace and harmony by being unreactive to unfavourable situations, similar to passivity of some metals.
- Realise that adaptability is an important virtue that helps one to cope up with difficult and adverse situations.

- Understand that self-respect is an important quality in life. Different metals have unique qualities that make them stand apart from others and one metal cannot be substituted with another in certain cases. Likewise one should know about his/ her qualities and should retain those qualities and remain unique

III. Process & Action Plan

Through this chapter teacher can highlight the values like adaptability which can be compared with the nature of metals which are malleable and ductile and can be molded into different forms. Teacher can also educate children about important life lessons like keeping calm to have inner peace and harmony, similar to some non-reactive metals.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1.Adaptability

This is a demonstration cum discussion activity that can highlight the importance of adaptability that helps one to cope up with difficult and adverse situations Refer B.1.

2.Inner peace and harmony, Positivity and Hope

This is a demonstration which teaches the importance of keeping calm, similar to non-reactive metals, to ensure inner peace. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



3. Self-Respect

This is a clue card making activity for a guessing game which teaches self-respect and also enhances *curiosity and scientific inference skills*. Refer.C.1.

While it would be ideal to expose students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The **core values** being considered are *Self-Respect, Adaptability, Inner peace and Harmony* along with sub values such as *Hope, Positivity and Inner strength*.

The unit also provides the scope to develop the following skills in the students like *curiosity and scientific inference skills*.

IV. Activities & Related Discussion

A. The lesson can be introduced with a discussion on the nature of various daily used substances made of different metals and non-metals. Teacher can explain the properties of metals and non-metals by demonstrating some of them. If you hit a plastic box it will not make much sound, whereas if you hit a stainless steel tiffin box, it would make a loud noise. Similarly if you touch a metal table you can feel that it is colder than a wooden table. These demonstrations would help children to understand the specific properties of metals like sonority, heat conduction etc., that make them different from non-metals.

B. Activities:

B.1. This is a demonstration cum discussion activity. Teacher can demonstrate ductility and malleability with the help of a metallic hair pin and a pencil lead. Try to bend the hair pin and the pencil lead. The hairpin will easily bend while the pencil lead will break. Similarly if you hit both with a hammer, hair pin would become flat while the pencil lead would turn into a powder. This is because hairpin is made of metal which is malleable and ductile while the pencil lead is made of non-metal which does not have these properties. In this context teacher can advise the students to be adaptable and flexible to any situation, similar to metals. Children can be told that adaptability is an important virtue that helps one to cope up with difficult and adverse situations.

Things needed: A metallic hair pin and a pencil lead.

B.2. Teacher can show a copper or iron vessel that was exposed to moist air for a long time. It can be noted that it has acquired a dull green or rusty coating. This is due to the reaction of these metals with oxygen in the atmosphere. If we polish them properly or insulate them with a coating they will not lose their lustre. But if we expose gold or platinum to the same conditions they will not lose their glow. This is because they remain non-reactive to oxygen. While explaining these, teacher can advise the children that one

does not have to react to every situation around them. This will help to keep their mind calm with inner peace and harmony. It can also be told that we should not lose hope in adverse situations and should continue with positivity. Negativity is only superficial most of the times, like the dull coating on the metals; one can come out of it with his/ her inner strength. It is always advisable to insulate oneself from negativity and bad thoughts, just like iron can be saved from rusting by coating it with oil or paint.

V. Assignments

C.1. The children can prepare a list of metallic and non-metallic items in their home. They can make clue cards for each item based on its properties. After preparing clue cards, children can bring it to class and play a guessing game. A student can give clues one by one and the whole class have to guess the item. This will not only make children familiar to the properties of metals and non-metals but also enhance their curiosity and scientific inference skills. During this guessing game teacher can highlight upon the importance of self-respect. Different metals have unique qualities that make them stand apart from others and one metal cannot be substituted with another for certain uses. Gold is an aesthetically beautiful metal, but for making a sword one prefers iron rather than gold, because we need strength rather than beauty, for that purpose. Likewise one should know about his/ her qualities and should retain and nurture those qualities and remain unique.

Resources

References:

- NCERT Class VIII Science Textbook.

Topic	Values / Life skills integrated & imbibed	Activities
Coal and Petroleum	<p>Core Values considered : Environmental Awareness, Responsibility and Interdependence</p> <p>Other Sub-Values: Gratitude</p> <p>Life skills: like General awareness and Writing skills.</p>	<ol style="list-style-type: none"> 1. This is a video demonstration cum discussion activity to inculcate gratitude in the minds of children and make them aware of interdependence Refer B.1. 2. This is a presentation making activity which teaches the importance of preserving the environment and reminds children of their responsibility. Refer B.2 3. An essay writing assignment that will help to enhance the general awareness and writing skills of students..Refer C.1

Materials / Resources needed

- 1) Facility to show a youtube video.
- 2).NCERT' text book class VIII

Description (of the points of discussion)

This chapter is a detailed study of the composition of fossil fuels, their formation and the environmental hazards related to their burning.

The topics discussed are

- Classification of natural resources into inexhaustible and exhaustible.
- Formation of fossil fuels like coal, petroleum and natural gas and various products originating from them.
- Importance of conserving fossil fuels and understand that it is our responsibility to conserve them for future generations.
- Fossil fuels are nature's gift to us, and we should be grateful to the nature for these blessings.
- Fossil fuels originate from dead matter of plants and animals and thus we are dependent on all other beings for these energy resources.
- Steps to protect our environment and avoid polluting it.

Unit 5**Coal and Petroleum****Environmental Awareness, Responsibility and Interdependence****I. Introduction**

There are so many materials catering to our various and vital needs such as water, food, air etc. All these things are available to us, more or less free of cost, and readily accessible without fear of being depleted one day. But there are some resources that may get depleted and may not last for future. Coal and petroleum are fossil fuels which are examples of such exhaustible natural resources. This chapter is a detailed study of the composition of fossil fuels, their formation and the environmental hazards related to their burning.

This chapter gives a chance to the teacher to make children aware of the numerous blessings nature has given us. Fossil fuels like coal and petroleum are nature's gift to us. This availability should make children feel grateful to mother nature. The interdependence between humans and other living beings is clearly evident when one study the origins of fossil fuels. In this context teacher can also remind children about their responsibility to conserve energy and thus save this planet from an energy crisis.

The core values focused upon are Environmental Awareness, Responsibility and Interdependence along with sub values such as Gratitude.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals.

- Learn about the classification of natural resources into inexhaustible and exhaustible.
- Explain the formation of fossil fuels like coal, petroleum and natural gas.
- Know about the various products originating from coal and petroleum.
- Realise that coal and petroleum are exhaustible resources and we should use them judiciously to conserve them.
- Appreciate the fact that fossil fuels are nature's gift to us, and we should be grateful to nature for these blessings.
- Understand that fossil fuels originate from dead matter of plants and animals and thus

we are dependent on all other beings for these energy resources.

- Be a responsible human by taking steps to protect our environment and avoid polluting it.

III. Process & Action Plan

Through this chapter teacher can educate children about environmental conservation. Children can be made aware of their duties as a responsible citizen. Teacher can encourage children to be grateful to nature for the numerous blessing given by her.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Interdependence and Gratitude

This is a video demonstration cum discussion activity to inculcate gratitude in the minds of children and make them aware of interdependence Refer B.1.

2 Environmental Awareness and Responsibility

This is a presentation making activity which teaches the importance of preserving the environment and reminds children of their responsibility. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1. An essay writing assignment that will help to enhance the general awareness and writing skills of students. Refer.C.1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the core approach – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The core values being considered are Environmental Awareness, Responsibility and Interdependence along with sub values such as Gratitude.

The unit also provides the scope to develop the following skills in the students like General awareness and Writing skills.

IV. Activities & Related Discussion

A. Activities:

B.1. This is a video demonstration activity. Teacher can show the video whose link is given here, to students and then start a discussion.

<https://www.youtube.com/watch?v=dZgcs6yH9Wg>

This video gives an idea on how fossil fuels are formed. Students will understand that fossil fuels are gifts of nature and are originating from dead remains of plants and animals. In this context, teacher can elaborate on how dependent we are on other living beings for our energy needs. Teacher can try to inculcate gratitude in the minds of children towards mother nature for the immense resources that she provides us.

B.2. This is an activity that will enhance the critical thinking ability and presentation skills of children, in addition to environmental awareness. Teacher can ask students to make a PowerPoint presentation on the harmful effects of using fossil fuels on the environment, and also steps to be taken to conserve energy. This activity also aims at making children aware of the small things they can do towards saving the environment.

V. Assignments

C.1. With the tagline "*Swachh Indhan, Behtar Jeevan*", Union Government has launched a social welfare scheme "Pradhan Mantri Ujjwala Yojana" (PMUY) on 1st May 2016. The scheme envisages creation of a smoke free Rural India and aims to benefit five crore families especially women living below poverty line (BPL), by providing concessional LPG connections to entire nation. By 2019, this scheme has converted eight crore families from harmful polluting environment to clean kitchens. The scheme has thus increased the usage of clean fuel i.e. LPG and is thus helping in reducing health disorders, air pollution and deforestation. Teacher can give a home assignment to children to write

an essay on this scheme. This will help to enhance their general awareness and writing skills.

Resources

References:

- NCERT Class VIII Science Textbook.

Topic	Values / Life skills integrated & imbibed	Activities
Combustion and Flame	<p>Core Values considered: Self-realisation, Self-motivation and Inner peace</p> <p>Other Sub-Values: Positivity and Hope</p> <p>Life skills: like Observation and scientific interpretation skills, Scientific acumen and practical knowledge.</p>	<ol style="list-style-type: none"> 1. A demonstration cum discussion activity that shows the importance of integrity in life . 2. An experimental demonstration which helps the children to realise the importance of teamwork and harmony. 3. A demonstration which teaches the importance of positivity. 4. Home assignment-Preparing a write up on a major change that happened, which helps to improve the cognitive and presentation skills of students.

Materials / Resources needed

- 1) some materials like straw, matchsticks, kerosene oil, paper, iron nails, stone pieces, glass, matchbox, coal, candle, copper wire.
- 2) NCERT text book class VIII F10

Description (of the points of discussion)

This chapter discusses the difference between combustible and noncombustible substances, types of combustion, parts of a flame and the products of combustion

The topics discussed are

- How to distinguish between combustible and non-combustible substances and also between combustion and burning.
- Factors essential for combustion and how ignition occurs.
- Various methods used for extinguishing different types of fires.
- What is a fuel and how its efficiency is calculated.
- The structure of a flame and about the various zones of a flame.
- The importance of self-realisation while relating it to substances that burn without a flame, but have fire inside.
- Just like a spark can ignite certain substances, you need self-motivation to move forward in life.
- One should try to preserve inner calm and peace, like a flame that has a cooler zone inside though it is very hot in its periphery
- .A fire station visit to learn about different methods of extinguishing fire.

Unit 6**Combustion and Flame****Self-realization Self-motivation and Inner peace****I. Introduction**

We all need fire to accomplish almost all of the chores in our day to day life. We light candles to get light in case of a power cut. We also burn wood to conduct bonfire. In all these cases substances undergo burning to emit heat and/or light. Liquefied Petroleum Gas, Compressed Natural Gas, Petrol, Diesel, Coal, Kerosene etc. are some of the substances that undergo combustion to give off heat and light. The chapter discusses the difference between combustible and noncombustible substances, types of combustion, parts of a flame and the products of combustion.

While explaining the fact that some substances burn with flame and some others do not, teacher can elaborate on self-realization. Just like we can see the fire only when we blow air on burning coal, you may have many hidden potentials that can be nurtured only when you realize it. Another value which can be inculcated in students is self-motivation. Sometimes only a spark is required to ignite one's imagination and performance. While explaining the structure of a flame, teacher can relate the value of inner peace which is very significant for maintaining a healthy mind. While explaining how a match stick gets ignited, teacher can inculcate positivity and hope in the minds of the children.

The core values focused upon are Self-realization, Self-motivation and Inner peace along with sub values such as Positivity and Hope.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals.

- Distinguish between combustible and non-combustible substances and also between combustion and burning.
- Learn about factors essential for combustion and how ignition occurs.
- Know about the various methods used for extinguishing different types of fires.
- Describe what a fuel is and how its efficiency is calculated.
- Describe the structure of a flame and about the various zones of a flame.

- Understand the importance of self-realisation while relating it to substances that burn without a flame, but have fire inside.
- Realise that just like a spark can ignite certain substances, you need self-motivation to move forward in life.
- Appreciate the fact that one should try to preserve inner calm and peace, like a flame that has a cooler zone inside though it is very hot in its periphery.

III. Process & Action Plan

This chapter provides an opportunity for the teacher to motivate the children to face challenges in life. Children can be advised to preserve their inner calm and peace and also stay strong and motivated.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:
Practical demonstration and discussion Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Self Realization and Motivation

This is a demonstration cum discussion activity to inculcate relate this to self-realization and motivation in the minds of children Refer B.1.

2 Inner peace and calmness

This is a demonstration which teaches the importance of preserving inner peace and calmness. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1. A fire station visit that helps to enhance scientific acumen and practical knowledge of students. Refer.C.1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The core values being considered are *Self-realisation, Self-motivation and Inner peace* along with sub values such as *Positivity and Hope*.

The unit also provides the scope to develop the following skills in the students like *observation and scientific interpretation skills, Scientific acumen and practical knowledge*.

IV. Activities & Related Discussion

A. The lesson can be introduced with an activity given in the text book. Collect some materials like straw, matchsticks, kerosene oil, paper, iron nails, stone pieces, glass etc. Under the supervision of teacher try to burn each of these materials one by one. If combustion takes place mark the material combustible, otherwise mark it non-combustible. . This will introduce children to the chapter as well as improve their observation and scientific interpretation skills.

Teacher can demonstrate that for a match stick to get ignited it should be rubbed against a match box which is rough and also have certain chemicals to assist ignition of the match stick head. Teacher can explain that the challenges in life can be compared to the matchbox, which helps to ignite the match stick. Children can be told that they should face challenges in life with a positive attitude and hope so that it will ignite the hidden strength in them.

Things needed: some materials like straw, matchsticks, kerosene oil, paper, iron nails, stone pieces, glass, matchbox.

B. Activities:

B.1.This is a demonstration cum discussion activity. Teacher can burn a piece of paper and a piece of coal . It can be observed that the paper burns with a flame while coal does not. But if you blow over the coal you can see the fire inside. Teacher can relate this to self-realization. Just like we can see the fire only when we blow air on burning coal , you may have many hidden potential that can be nurtured only when you realize it. Your hidden talents and strength may not be visible to the outside world until and unless you bring it out. Here it can also be pointed out that self-motivation is required to bring out and nurture one's talents. Sometimes a spark can ignite a big fire. Likewise you may require some motivation to move forward. .It can come from inside or outside.

Things needed: Paper and coal.

B.2. This is another interesting demonstration from the text book. Light a candle. Insert a copper wire into the non-luminous part of the flame, i.e. the outer side. We can see that the copper wire in the non-luminous part becomes red hot indicating that the outer zone of the flame is the hottest and inner zone is cooler. Teacher can explain the structure of the flame and the various zones of the flame. In this context he/ she can also elaborate on the fact that one should try to preserve inner calm and peace, like a flame that has a cooler zone inside though it is very hot in its periphery. Children can be told that inner peace is required for a sound mind and a sound mind is necessary for a successful life. So it is always better to stay calm even in adverse situations.

Things needed: A candle, matchstick and a copper wire.

V. Assignments

C.1. Teacher can take the students for a fire station visit which will help them to know about the various equipment used by firemen and how they are operated. They can also be made aware of the first aid to be given for fire burns. This will also help to enhance the scientific acumen and practical knowledge of the children.

Resources

References:

- NCERT Class VIII Science Textbook.

Topic	Values / Life skills integrated & imbibed	Activities
Conservation of Plants and Animals	<p>Core Values considered: Environmental Awareness and Environmental conservation</p> <p>Other Sub Values: Individual and Collective Responsibility</p> <p>Life Skills: Identification, Communication and Solution giving</p>	<ol style="list-style-type: none"> 1. The story of the Kashmiri girl Jannat cleaning Dal lake can be researched and put up in the class by students and students can be encouraged to emulate the individual responsibility shown by the child, to conserve the environment around her. 2. Researching the story of "Afroz shah-beach cleaning drive" can be used to make students understand the importance of collective responsibility. 3. Reading the book "Silent Spring" by Rachael Carson, can help children understand the importance of power of observation and research and action for plant and animal conservation 4. Collecting data about endangered species and graphically depicting it help children to understand the loss to the environment because of human intervention 5. Researching organization like WWF and IUCN can help children understand how various organizations are functioning for environmental conservation. (Collective responsibility) 6. An interesting movie 'Jungle' released in 2019, can be shown to understand the menace of poaching and make children understand that buying animal products should be avoided, to stop animal exploitation and prevent poaching.

Materials / Resources needed

- 1) Index cards.(can be made by teacher or by students).
- 2) NCERT textbook Class VII.

Description (of the points of discussion)

In this chapter we learn of about the need for conservation of Plants and Animals through the following topics.

- Understanding the terms like ecosystem, flora, fauna, endemic species, endangered species etc.
- To learn the importance of wild life sanctuaries and national parks
- To comprehend the consequences of deforestation and loss of habitat and restoration of the same with help of two stories of ‘A little child Jannat cleaning Dal lake’ and ‘Afroz Shah beach cleaning drive” making them realize they can change things. (value : Introspection/ Self- realization)
- To identify how afforestation and conservation can sustain this world
- To inculcate the value of environmental appreciation and environmental awareness
- To make children understand how self-discipline and societal discipline can conserve the environment
- .To inculcate self-realization and action taking habits for environmental conservation.

Unit 7**Conservation of Plants and Animals****Individual responsibility, Collective responsibility, Observations,
Environmental conservation****I. Introduction**

Conservation of plants and animals is a topic which is very much relevant for a child in today's day and time. We introduce this topic with 'What is an ecosystem?' An ecosystem is made of plants, animals and microorganisms, in an area, along with non-living factors such as temperature, climate, soil, rivers etc.. Conservation of plants and animals is a topic close to most people's heart, and therefore every child needs to understand the importance of conservation of our environment.

In today's world, we find that, there is a huge gap between actually doing something about environment conservation and just talking about it through various mediums and hence, encouraging children to do activities, which inspires them to solve problems by taking action, leading to environment conservation becomes of paramount importance. Children need to be made aware that it is not necessary to act on a global scale but if every child or individual does his or her bit to contribute to improve their immediate surroundings then the larger picture of the world environment can be changed. Hence what matters is the small things that we do which in turn will lead to a larger change.

Every individual's attitude towards this earth counts. Through this chapter we can inculcate the values of Individual responsibility, Collective responsibility, Observation skills and Environment awareness and Conservation.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value-based goals:

- Understanding the terms like ecosystem, flora, fauna, endemic species, endangered species etc
- To learn the importance of wild life sanctuaries and national parks.
- To comprehend the consequences of deforestation and loss of habitat and restoration of the same with help of two stories of 'A little child Jannat cleaning Dal lake' and 'Afroz Shah beach cleaning drive' making them realise they can change things.

(value: Introspection/ Self- realisation)

- To identify how afforestation and conservation can sustain this world
- To inculcate the value of environmental appreciation and environmental awareness
- To make children understand how self-discipline and societal discipline can conserve the environment.
- To inculcate self-realization and action taking habits for environmental conservation.
- To take action to solve environmental related issues

III. Process & Action Plan

Storytelling, reading a book, data collection, showing a conservation related movie, planting a tree or an activity of replacing plastic bags by making paper/cloth bags can be undertaken for inculcating values of Environmental Conservation through the topic of ‘Conservation of plants and animals.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Every child in the class can plant a different sapling and some can create a Herbarium. Ref A.



B. Carry out the varied activities in class as given below



1 Individual Responsibility

Kashmiri Girl
Jannat's story - Ref B1

2. Collective Responsibility

Mumbai beach cleaning
– Afroze shah – Ref B2

3. Power of Observation

Read the book “Silent Spring” by Rachel Carson – Ref B3

4. Data collection

Find the current statistics of endangered animals based on an earlier data given in the extended activity. Ref B4

5. Organizations

Encourage students to research on various international conservation organizations like IUCN & various organizations Indian Forest service etc. Ref B5

6. Conservation

A movie relating to animal conservation can be shown. – Ref B6



C. Aid generalization of the concepts and the assignments given below will reinforce the awareness.



1. Ask children to identify environmental problems in their vicinity. Ref C1

2. Use of non-degradable substance like plastic need to discouraged. Ref C2

3. Children should be encouraged to be a part of afforestation in the environment. Ref C3

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The **core values** being considered is **Environmental awareness** and **Environmental conservation** along with other sub-values like **Individual responsibility**, **Collective responsibility** and **Observation skills**.

The unit also provides the scope to develop the following life skills in the students like **Identification skills**, **Communication skills** and **Solution-oriented skills**

IV. Activities & Related Discussion

A. During the context activity of introducing the subject topic of conservation of plants and animals let every child be encouraged to plant a sapling and take care of it along with creation of a small Herbarium book, which helps them to identify various plants and its scientific names and living conditions etc. (Example. Tulsi – *Ocimum sanctum*, mango tree – *Mangifera indica*). Thus, enhancing their knowledge and generating their interest in the topic.

A practical activity done by the child will help them to be more appreciative of the environment around them and encourage them to do more things for the environment.

B1. Real life story: Seven-year-old Jannat from Kashmir has been setting an example for 2 years with her efforts to clean the Dal lake in Srinagar. Her father recalls an incident which made him feel concerned about the rising pollution level in Dal lake. He says he was rowing a boat along with the foreigner in the interiors of the lake when the foreigner refused to dump a cigarette bud into the lake and wrapped it in a piece of paper and kept it in his pocket. He says that incident made him realize that every person has to act responsibly in order to keep the environment clean Jannat along with her father had shouldered the responsibility of contributing towards keeping the lake clean.

Let every child identify an area in his or her locality which needs to be cleaned. This activity can be done in spare time and in groups. This will help the children to realize how the first step towards environmental conservation is self- awareness. This real life story is available on internet for further reference, if required.

B2. Real life Story: Versova beach was one of the most unclean beaches in the city of Mumbai. In 2015 Afroz shah, started this clean up drive and got more citizens involved in it, day by day. Soon it became the largest beach clean -up in the world. The beach clean-up

started at 8:30 am and went on up to 10:30 am every weekend. Even in the 207th week of his regular routine, plastic bags, cement sack, shards of glass, cloth seeped in water and sand were uncovered by the hands of these people that stood by him. The collective garbage was then swept up by trucks and strategically recycled by collaborative efforts through a circular economy. Heading the event Afroz's team of volunteers gave safety briefings and instructions, made booths that gave out masks and gloves for hygiene purpose, and got down and dirty to complete their intended missions. These beach cleanups have also expanded to Shillong, Manipur and Kolkatta. Thus, everybody doing a small bit to create a large impact. Afroz runs an organization called "Ocean citizen" – One ocean one love which also pledges against single use plastic, which on entering the ocean endangers the life of all marine species.

This real life inspiring story is also aimed at making the children aware that every person can contribute to environment conservation by being actively involved in various conservation projects and self-discipline and initiative goes a long way in conserving our environment.

B3. "Silent Spring" is an environmental science book by Rachel Carson. The book was published on September 27th, 1962 documenting the adverse environmental effects on birds, caused by the indiscriminate use of pesticides. Carson accused the chemical industry of spreading disinformation and public officials of accepting the industry's marketing claims unquestioningly.

When Carson saw that DDT killed birds around her friend's house and the government was willing to spray chemicals even stronger than DDT, she decided to research and present the facts to the public in the form of a book. The result of her research was Silent Spring, which brought environmental concerns to the fore. The book was met with fierce opposition by chemical companies, but owing to public opinion it brought about numerous changes.

It spurred a reversal in the United States national pesticide policy, led to a nationwide ban on DDT, for agricultural uses, and helped to inspire an environmental movement that led to the creation of the US Environmental Protection Agency. Thus Rachel Carson, shattering the silence, went on to help create national policies for birds and animal conservation.

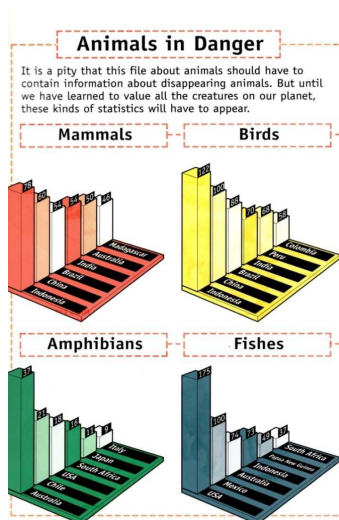
The teacher can use this story to make children understand the importance of observations and research to develop environmental awareness.

Activity: 1. List down the various habitats for animals and birds in your area.

2. List down the various animals and birds that reside in these habitats.

B4. Children can be encouraged to find out the data regarding endangered species mentioned in the red data book. Given below is a sample sheet of the same. They can make a country wise or animal wise bar graph representing the endangered species to

understand the importance of saving wildlife, thus inculcating environmental awareness and empathy in them.



B5. It is the conservation organizations that lead the way in getting the things done. They make us aware of the problems that exist. They gather facts and figures from all over to show how the actions of a single country can damage the entire planet.

The International Union or the Conservation of Nature and Natural Resources, the IUCN, gathers information from other conservation organizations all over the world. It publishes information about endangered wildlife in its Red Data Book.

Activity: Join a group like WWF (Worldwild life fund) or any other similar organization in your local area for conservation of plants and animals.

B6. Children can be shown the Hindi movie 'Jungle' released in 2019 which revolves around a veterinary doctor who upon returning to his father's elephant reserve, encounters and fights against an international poacher's racket. Learning to take a stand against atrocities to animals for satisfying human needs should be ingrained in the mind of the children.

V. Assignments

1. To make a list of problems in your area and list their practical and doable solution. Talk to the elders in the region and get down to finding a solution for the same with the help of the local community.

2. Make paper bags and distribute it, on a weekly basis, to nearby shopkeeper's to replace plastic bags. Each child can distribute about 20 paper bags.
3. A group of 5 children can undertake an assignment of planting one or more tree/shrub in their school of society compound and take turns to take care of the tree /shrub. Weeding the space, watering the tree on a regular basis and giving manure to it will help them to understand the importance of self-discipline which in turn will lead to a greener environment.

Resources

References: Times of India

Internet articles

Marshall direct learning - the I files

Young Discoverer series - Animals

Resources for Teachers:

Book: NCERT Class VIII Science text book

Topic	Values / Life skills integrated & imbibed	Activities
Cell Structure and Function	<p>Core Values considered: Adaptability and Unity in Diversity</p> <p>Other Sub Values: Appreciation of life</p> <p>Life Skills: Observation Skills</p>	<ol style="list-style-type: none"> 1. Making a chart of a single stem cell capable of developing into different kinds of cells can help understand how adaptability is a key feature in growth 2. The chart of a single cell, multiplying and differentiating into different kinds of cells and finally coordinating together, to make an individual function as a whole can be used to foster the value of how important it is to function in unity inspite of diversity, for succeeding in any endeavor. 3. A small chart of Prokaryote and Eukaryote and a print out of comparative size chart from atoms to Eukaryotes can be shown to children, helping them develop the value of appreciation about how life starts at such micro levels and develops into beautiful individuals as themselves . This activity is aimed at developing the value of Appreciation of life.

Materials / Resources needed

- 1) Pen, Pencil, Eraser, Scale, Chart papers, printouts, multimedia and internet wherever required
- 2) NCERT text books of Class VIII

Description (of the points of discussion)

In this chapter we learn about the cell structure and function through the following topics:

- To learn about the discovery of cell, its variety, number, shape and size
- To understand cell structure and function.
- To study the various cell organelles.
- Compare a plant and animal cell
- To perform the onion peel experiment to study the plant cell
- To prepare a slide scraping the inside of the cheek to observe animal cell.
- To appreciate the micro management of cells
- To appreciate how a simple cell multiplies and develops into an entire individual being inculcating the value of potential development.
- To understand how coordination and team work can lead to success.

Unit 8**Cell Structure and Function**
Adaptability, Unity in Diversity, Appreciation**I. Introduction**

A cell is a structural and functional unit of life. Cells exhibit a variety of shapes and sizes. An unicellular organism with a single cell performs all the basic functions that are performed by a variety of cells in multicellular organisms. Every organism has many organ systems. Each organ system is made up of many organs working in coordination. Each organ is further made up of tissues, a group of similar cells performing similar functions. The tissues in turn are made of cells, the basic structural unit.

Through the chapter of cell, the child can be made to appreciate how a simple cell develops into a complex human being. Also, the teacher can emphasize on the variation in the size, shape and number of cells like the smallest cell is 0.1 to 0.5 micrometre in bacteria to the largest cell being the egg of an ostrich, which can be seen by the naked eye.

The study of cell organelles like the cell membrane, cell wall, cytoplasm, nucleus, vacuoles, plastid and chloroplasts and their functions can give them a glimpse into micromanagement.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- To learn about the discovery of cell, its variety, number, shape and size.
- To understand cell structure and function.
- To study the various cell organelles
- Compare a plant and animal cell.
- To perform the onion peel experiment to study the plant cell.
- To prepare a slide scraping the inside of the cheek to observe animal cell.
- To appreciate micromanagement in the cells.
- To appreciate how a simple cell multiplies and develops into an entire individual being inculcating the value of potential development.
- To understand how coordination and team work can lead to success.

III. Process & Action Plan

Showing a cell under the microscope, a bit of research on cell number, shape and size, a chart making activity of a single cell multiplying into 2, 4, 8.. cells and developing into a complete new individual and a chart of a single stem cell differentiating into different cells etc. can be used to help students understand the value of Appreciation of life, Adaptability and Unity in Diversity.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Preparing a slide of Onion peel and showing it under the microscope. Ref A.



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Adaptability

While taking the topic of types of cells student can make a chart of pluripotent stem cell, differentiating into any new cell to help to understand the value of adaptability. Ref. B1

2. Unity in Diversity

A differentiating cell developing into an individual organism helps to understand the value of Unity in Diversity. Ref B2

3. Appreciation

This activity will help the student appreciate that life starts at one micrometer and grows as large as elephants. Ref B3



C. Aid generalization of the concepts learnt, through assignments (given below).



1. The assignment of making a power-point presentation of various cell shapes can make the students appreciate the variety in life. Ref C1

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** - Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The **core values** being considered are **Adaptability** and **Unity in Diversity** along with other sub-values like Appreciation of life.

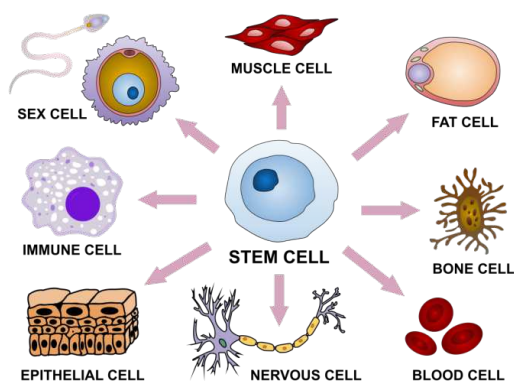
The unit also provides the scope to develop the following life skills in the students like looking beyond what is visible at the surface level, understanding things in depth and observation skills.

IV. Activities & Related Discussion

A. During the context activity of introducing the topic of Cell Structure and Function, let the children observe the onion peel cell under the microscope.

As the children observe the structure of cell under the microscope, teacher can touch upon the topic of how their own life has started as a single cell but which further worked in unity to make them function perfectly as an individual.

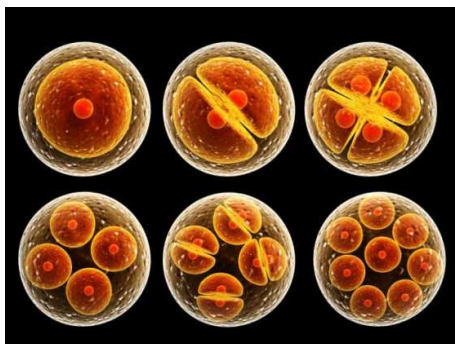
B1. Adaptability: A single stem cell can develop into any cell



In this diagram a simple pluripotent stem cell is shown to develop into a muscle cell, nerve cell or a blood cell, among others, as per the requirement of the body.

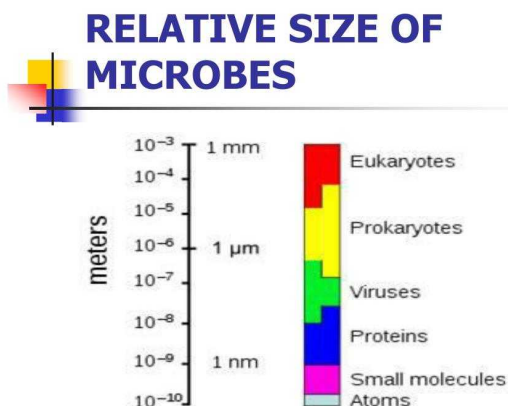
Based on the above diagram the teacher can make the child appreciate how a single cell adapts and develops to do different functions in the body, thus emphasizing how **Adaptability** is one of the most important qualities in leading a smooth life.

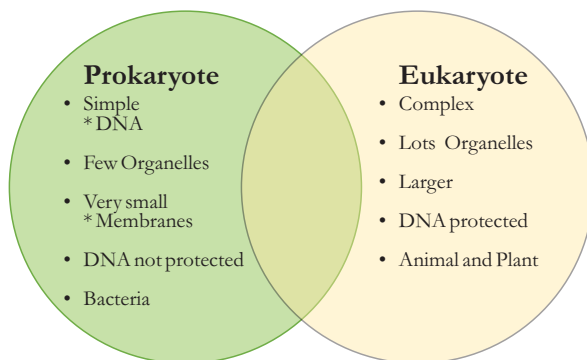
B2 Ask the children to make a chart of the following diagram and put it up in the class



Here we can see the division of a single cell into 2, 4, 6, 8, 16 and so on. The process of differentiation emphasizes how a simple cell develops and differentiates into various different kinds of cells, taking up different functions, finally to coordinate and work in unison for the individual to function at its best. Here the teacher can explain how every life starts from a single cell which differentiates into a diverse variety of cells and finally work together for the individual to function thus emphasizing the value of Unity in Diversity in the minds of the children.

B3. Eukaryotic cells or new cells are about 10 times the size of a typical Prokaryotes (a primitive cell). They range between 10 and 100 μm in diameter while prokaryotes range between 1 and 10 micrometres in diameter.





The teacher can ask the students to depict these diagrams in the form of charts in their class rooms in order to make them understand and appreciate how life starts at such a miniscule level and grows in to a multitude of large world of varied plants and animals.

This activity is aimed at making them appreciate life. Children must understand that they should not end up fighting or wasting their life, without an aim. They must endeavor to become the best versions of themselves and contribute to the world in whatever positive way they can.

V. Assignments

C1. Make a power point presentation of the various shapes of an amoeba, a paramecium, an RBC cell, a spindle shaped muscle cell, a long-branched nerve cell, a human cheek cell and a plant and animal cell to understand the difference in the variety that exists at the cellular level, in this world and thus to appreciate the existence and beauty of life

Resources

References: *Mission Microbes PPT – Slideserve.com*

en.m.wikipedia.com, Medical News Today - Internet

Resources for Teachers:

Book: NCERT Class VIII Science text book

Topic	Values / Life skills integrated & imbibed	Activities
Reproduction in Animals	<p>Core Values considered: Gratitude, Tolerance and Compassion</p> <p>Other Sub Values: Respect for Woman</p> <p>Life Skills: Communication skills and Writing skills.</p>	<ol style="list-style-type: none"> 1. Children can be asked to create their own baby book, wherein they record their childhood details with the help of their parents, to help them develop Gratitude towards their parents. 2. Make a chart of the gestation period of various animals could help them understand the long periods for which the female of every species, nurtures the child, helping them to understand that they need to respect women as they are the life givers. 3. The life story of the Salmon, wherein an adult salmon in giving birth to a younger generation, gives up its own life can help to understand the values of sacrifices made by elders for the younger generation, helping them to develop respect and compassion.

Materials / Resources needed

- 1) Pen, Pencil, Eraser, Scale, Chart papers, printouts, multimedia and internet wherever required
- 2) NCERT text books of Class VIII

Description (of the points of discussion)

In this chapter we learn about the importance of reproduction as a life process, through the following topics:

- To learn about the different modes of reproduction
- To understand female reproductive organs
- To understand both internal and external fertilization and formation of the zygote.
- To understand the development of the embryo.
- To understand and observe under the microscope asexual reproduction in an amoeba and hydra.
- To learn to have the value of Gratitude.
- To learn the value of Tolerance
- To learn the value of Compassion

Unit 9**Reproduction in Animals**
Gratitude, Tolerance and Compassion**I. Introduction**

Reproduction is one of the essential parts of the life processes. It is due to this life process there is continuity in life on the planet earth. It is amazing to think of the number of species, which exist in this world, due to the process of evolution and procreation. In this chapter, you as a teacher would be covering the topic of reproduction of animals from reproduction in the simplest unicellular organisms like amoeba undergoing binary fission to various forms of asexual reproduction involving only a single parent to sexual reproduction in higher animals, and also introducing the human male and female reproductive system, in detail. As you deal with the topic of fertilisation and formation of a zygote, a single cell which develops into a full-fledged individual, the children can be made to think about how intricate, beautiful and valuable their life is. Taking this angle they can be encouraged for charting out their self-development, respecting all forms of life around them and never harming any other fellow human being as they understand through the various activities in this chapter about their own life development.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- To learn about the different modes of reproduction.
- To understand the male reproductive organs.
- To understand female reproductive organs.
- To understand both internal and external fertilization and formation of the zygote.
- To understand the development of the embryo.
- To understand and observe under the microscope asexual reproduction in an amoeba and hydra.
- To learn to have the value of Gratitude.
- To learn the value of Tolerance
- To learn the value of Compassion.

III. Process & Action Plan

Storytelling, researching gestation period of various species, a fun activity of unravelling their childhood by creation of a baby book etc., can be used to develop the value of Gratitude, Tolerance and Compassion. The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Charting the development of an embryo in order to appreciate the process of creation of life. Ref A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Gratitude

Creation of a 'Baby book' to help develop gratitude towards their own parents.

Ref. B1

2. Tolerance

The Gestation period of Birds and Animals to teach the attribute of tolerance.

3. Compassion

The salmon Story teaches the story of compassion and understanding.

Ref. B3



C. Aid generalization of the concepts learnt, through assignments (given below).



1. To draw labelled diagrams of Reproductive systems
Ref C1

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** of – Knowing, Valuing and Acting the Values embedded in the topic.

The core values being considered are **Gratitude, Tolerance and Compassion** along with other sub-values like Respect for women.

The unit also provides the scope to develop life skills like **Writing skills** and **Communication skills**.

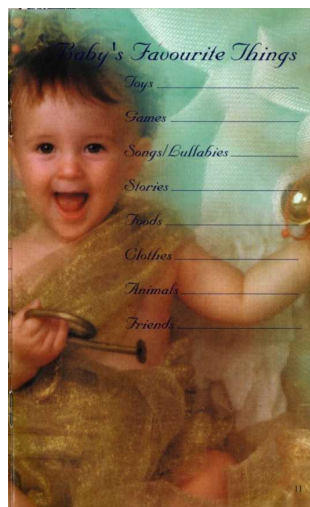
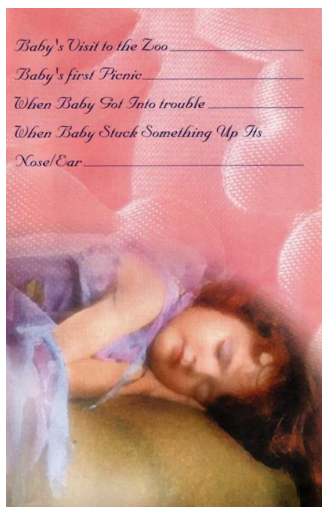
IV. Activities & Related Discussion

A. During the context activity of introducing the topic of Reproduction in Animals, the teacher can start by showing the chart of the growth of a baby from the foetus until birth and discussing the various parameter of growth. A representative chart is given below:



- In the first month the baby is still a blob of cells of 1 cm in length. The heart, spine, lungs, spine, arms and legs start developing now.
- In the second month the baby grows to 2 cms and has a beating heart. This is the time when the eyes, bones, ankles, elbows and genitals start to form.]
- In the third month, the baby is about 7/8 cm long
- In the fourth month it is 13 cms, in fifth month about 20 cm long and so on.
- The nourishment for the child is obtained from the mothers blood and by 9th month, the baby will be about 45 cms (the size of a long scale) and weighing anywhere between 2.5 to 4 kgs.
- Charting this journey of development will help to develop a sense of awe and respect for creation.

B1. The value of Gratitude is understood when children are made to create a 'Baby Book' where every child goes back to his or her parents and asks them about the easy and the difficult things the parents did for them, when they were small and were not capable of taking care of themselves. Here the child and the teacher can include as many things as they want. A reference chart is given below:

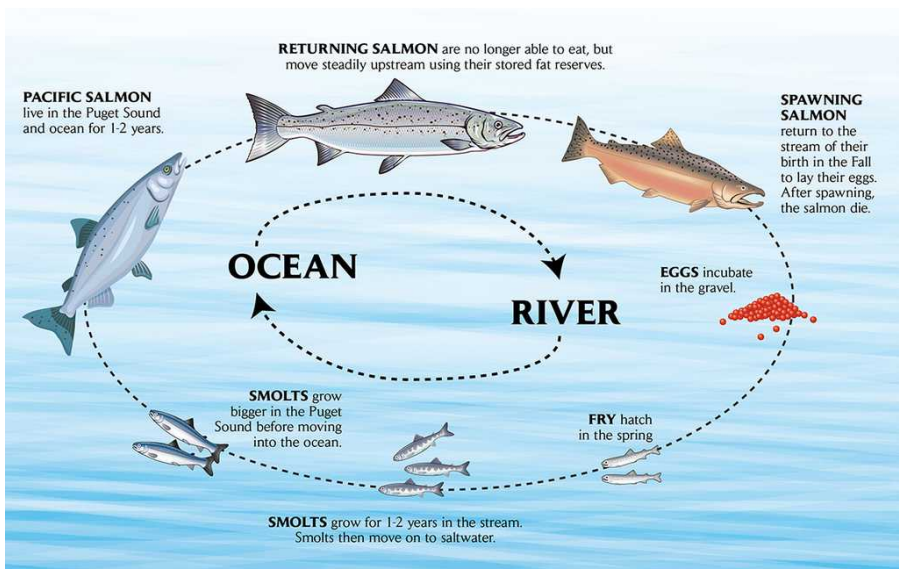


This activity should be able to help them understand that reproduction is not just a hormonal requirement, but it is a process. where every parent carefully takes care of the child, when ever he / she is not capable of taking care of his or her own activities. Therefore, when a child turns into a teenager, he or she is expected to turn into a responsible adult, who in turn can take care of others in the society, in a responsible manner.

B2. In the process of teaching the chapter of reproduction in animals, this activity of finding out the gestation periods of various animals can help them understand the value of **Tolerance** and **Respect** for women. **The female of every species shows tremendous tolerance to bear, nurture and give birth to a young one of the species** .A reference chart for this activity is given below. In the process of preparing this chart the children will be able to appreciate the value of tolerance wherein the teacher can emphasise on the various sacrifices made by women to nurture a child from the stage of zygote – a single cell to birth.

Hence at no point in life should women should be seen as an object of disrespect, they should always be treated with utmost care and respect, as they are the life givers.

B3.	The story of the Salmon Animals / Birds	Gestation period from Zygote to Birth
1	Cow	
2	Deer	
3	Bear	
4	Dog	
5	Lion	
6	Camel	
7	Cat	
8	Elephant	18 months to 2 years
9	Human Being	



1,000 miles, traveling up to 18 miles per day over 2-7 years, before finally returning home to reproduce just one time, to begin the cycle again.

This story of the Salmon giving birth to their new generation by giving their own life is a testimonial to the tremendous sacrifice made by the parental generation for giving life to the new generation. This story is depicted here to make the child understand the elderly generation has undertaken a lot of sacrifices to bring the youth to its best and therefore the children must exhibit Compassion and Understanding towards their parents and all elder generation.

V. Assignments

C1. To draw a labelled diagram of human male and female reproductive system and to enlist the functions of each part.

Resources

References: *Washington Forest Protection Association.*

www.livescience.com

Resources for Teachers: Book: NCERT Class VIII Science text book

Topic	Values / Life skills integrated & imbibed	Activities
Reaching the age of adolescence	<p>Core Values considered: Self acceptance, humanity and respect for woman</p> <p>Other Sub Values: Self control and responsible behavior.</p> <p>Life Skills: Writing, Understanding and discerning skills</p>	<ol style="list-style-type: none"> 1. The story "Strength of a women" given in the activity section of the unit, can be used to make children understand the value of respecting women 2. The activity of creating their own Quote Book with the help of quotes given in the activity section of this unit, in this book, can be used to develop values in humanity and self-acceptance. 3. Discussion on short stories of cellular memory given in the activity section of this unit can help the teacher to make students understand how the body gets addicted to various vices, due to cellular memory and probably help them to understand, why they should say No 'to starting the habit of smoking, alcohol and drugs'.

Materials / Resources needed

- 1) Pen, Pencil, Eraser, Scale, Chart papers, printouts, multimedia and internet wherever required
- 2) NCERT text books of Class VIII

Description (of the points of discussion)

In this chapter we learn about the various changes during adolescence through the following topics:

- To understand adolescence and puberty
- To learn about the changes at puberty in boys and girls.
- To study about role of hormones in initiating reproductive function.
- To learn about how the 'Y' chromosome is responsible for the sex determination of the child
- To learn about the nutritional needs of an adolescent and personal hygiene.
- To understand the role of endocrine glands like pituitary glands, thyroid glands, adrenal gland and pancreas for the functioning of the body.
- To learn the importance of physical exercise and saying no to drugs, alcohol, smoking etc.
- To learn the value of Self-acceptance.
- To understand responsible behavior.
- To behave in a positive and respectful manner

Unit 10**Reaching the Age of Adolescence**
Self-Acceptance, Humanity and Respect for Woman**I. Introduction**

Growing up is a natural process. The period of life, when the body undergoes changes, leading to reproductive maturity is called as adolescence. Adolescence begins around the age of 11 and lasts upto 18 to 19 years of age. Since this period covers the teens, adolescents are also called as teenagers. In girls adolescence begin a year earlier than boys. Also, the period of adolescence varies from person to person.

The human body undergoes several changes during adolescence. These changes mark the onset of puberty. The most important change which marks puberty is that boys and girls become capable of reproduction. Puberty ends when an adolescent reaches reproductive maturity.

Reaching the age of adolescence is an important topic in standard VIII as children are still small and are more receptive to value based advice, than they would be, a year later. Therefore a well-informed mind, through education, would be able to handle the changes occurring in their teenage years in a much better way.

Therefore, to teach them the right things will help them behave in a more responsible manner, by developing the values of Respect toward themselves and Respect towards others. Some of the values which can be incorporated through this chapter are Self-Acceptance, Humanity and Respect for Woman.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- To understand adolescence and puberty.
- To learn about the changes at puberty in boys and girls.
- To study about role of hormones in initiating reproductive function.
- To learn about how the ‘Y’ chromosome is responsible for the sex determination of the child.
- To learn about the nutritional needs of an adolescent and personal hygiene.

- To understand the role of endocrine glands like pituitary glands, thyroid glands, adrenal gland and pancreas for the functioning of the body.
- To learn the importance of physical exercise and saying no to drugs, alcohol, smoking etc.
- To learn the value of Self-acceptance.
- To understand responsible behavior.
- To behave in a positive a respectful manner.

III. Process & Action Plan

Reading a story, creating their own quote book and hearing, reading and researching on cellular memory can help students to say no to drugs., develop the value of Self-Acceptance, Humanity and Respect for Women. The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Teacher can introduce the context activity in the class.
Teacher can introduce the stories in the class for the inculcation of the following values

B. Carry out the varied activities in class (given below) in the sequence specified.

1. Respecting Women

Story taken from “Chicken soup for the Mothers Soul” - to be discussed in the class.
Ref. B1

2. Self-Acceptance & Humanity

Activity - Children can create their own creative “Quote book”
Ref B2

3. Self-Control and Responsible behavior

Discussion on two short stories based on cellular memory to emphasize the importance of saying ‘No’ to smoking, alcohol and drugs. Ref B3

C. Aid generalization of the concepts learnt, through assignments (given below).

1. Write an analysis of Bad influences of the society on youth and how you would guide yourself on the right path. Ref C1

2. Write an essay on whether a Man or a Woman is responsible for the sex determination of a child. Ref C2

3. Write an essay on “Why Woman-Janani should be respected at all stages of life”
Ref C3

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** - of **Storytelling and Analysis** for understanding the values embedded in the topic.

The **core values** being considered are **Self-Acceptance, Humanity and Respect for Woman** along with other sub-values like **Self Control and Responsible behavior**.

The unit also provides the scope to develop the life skills in students like **Writing, Understanding and Discerning** skills.

IV. Activities & Related Discussion

B1. Here is a story taken from 'Chicken Soup for the Soul' - Indian Mothers. This story typically shows many of the perils of the human mind set. The aim of the Story is to make the adolescent aware that how a good attitude can be instilled by the parents in their sons by proper upbringing and how a women can contribute towards building a nation, by educating their sons towards the right attitude.

Let this story be read out to the class and children can be asked to debate on different points and they can be asked to write down their viewpoints on what they learnt from the story.

“The strength of a Woman”

One chilly December morning, I got a call. 'Smita, I'm sorry to bother you at this hour of the morning. I could hear a rather tired voice, clearly uncomfortable. "Who's this?" I asked. 'Smita this is Ramya here, Ramya Ramkrishnan.

I couldn't place her, though the name sounded familiar. 'We were together in college. Smita, we were part of the same chorus that won the intercollegiate singing competition. We were also once pitted against each other in a debate competition ... you remember?' she reminded me. Not wanting to dwell on how I had lost to her in that fiery flame of words, I instantly said, 'Oh yes ... Ramya!' A heady mix of intellect and revolt, Ramya was very popular in college, known to all as a crusader for a cause. She earned the wrath of many for breaking conventions, and most of us silently approved but never admitted so openly. 'Why can't she just be like one of us and enjoy her heydays rather than picking up trouble all the time,' I would always wonder whenever I saw her passionately immersed in a fight for justice. Ramya muttered, 'You there, Smita? This may not be the right time to speak to you. But I really need your help. 'Sure, please go ahead,' I assured her, uncertain as to how I could help someone who was an inspiration to many while in college.

I have walked out of my husband's home with my seven-year-old son. He is clinging to me for strength and support,' she said. 'I regularly read your write-ups in the Indian Express and contacted your office for your number. "Smita, I need you to help me out with the name of the NGO that you had mentioned in your article some time back - the one that runs a school for children of single mothers.

I asked her to come over since it was early morning, and NGO office was close by. 'Alright', said Ramya, reluctantly.

Ten years had passed since we left college, and she was still full of surprises. She looked frail but wished me a chirpy 'hello'. She looked anemic and her lips were chapped, but her angelic face still bore the same charm and warmth of a woman who was the agony aunt of the college. Her eyes bore dark circles and looked puffy, but never once looked down. She stood before as me with grit and determination.

'I don't want my son to feel as if the world around him has changed overnight. He should continue to study even while I am out there for a job, she said even before I had offered her a seat. Even when her own future was uncertain, education was foremost on her mind.

She explained, 'I skipped my graduation exams to get married to the man of my dreams. Sartaj. My parents objected since Sartaj was a Muslim. But I was adamant.' She continued; the hasty marriage was more to prove a point. I soon realized what a mistake it was, for within a few days he started physically abusing me. I allowed my love for him to dominate my every other emotion. Soon Rehaan was born and I allowed myself to howl in pain only when my baby was not around. But yesterday, Sartaj threw me on the floor in anger and I have never seen my child more afraid or upset in life. I cannot bear that and hence decided it to put it all behind me and move on.

I tried talking to my parents. My father feels it's too early for a decision and my mother feels a child should not be brought up without a father. Besides, they now admire Sartaj because he bagged himself a fat promotion, a penthouse and a Mercedes. He belongs to an illustrious family; they now say was that men from respectful backgrounds need not always have the most respectful behavior. I tried to argue with them but all they had to say was that it would be foolish to give up on a man whom I had chosen myself and from whom a security and a lavish living was assured. "After all, it's not like he beats you up everyday," was all that my mother had to say. She talked to me about values and culture and tradition but never about my own happiness. Clearly, I cannot depend on her.

'But in personal grief, I should not forget that it is we mothers who build nations. I am at a crossroads, but my child takes priority over everything else. My mother-in-law did not have the strength to stop her son from doing wrong. Forget my mother-in-law, my own mother did not have the strength to face the society. Today, if I don't find the strength to stand up for my son's wellbeing, he might never be able to stand for his own. I want him to come home to a safe abode, for if he cannot find comfort in his own home, he can find it nowhere else.

We went to the Sahara office soon after, and enrolled Rehaan at their school for a nominal fee. They provided Ramya refuge for a month, by when she was supposed to find alternative residence and a job.

'You can stay with me,' I had willingly offered.

'Smita, I've been dealing with everyone else's problems all my life. God just wants to see if I can deal with my own. Won't you let me do it my way? Girl, I've an incurable ego, don't I?' she said with a chuckle, while pulling me into a tight hug. I found my eyes turning moist with love and admiration for this woman whose heart was bigger than everything else I had known, seen and ever felt.

Many years passed. It was raining heavily that morning and I opted for the bus go to the temple. The bus was packed and there was barely any place to stand. I was to alight at the next stop when I saw a girl in her early twenties hold a man by his collar and slap him. The sound reverberated and everything around me turned silent. In a split second, a huge woman standing right ahead of the girl pulled her by her hair and slapped her even harder. What did you think you were doing?' the woman admonished the girl. 'He is the man you are soon going to be married to,' she chided and immediately pulled the boy to her, who by now had turned red with embarrassment, I don't want you to get married to a cultureless woman like her, son. We will immediately get this alliance stalled,' she comforted him. 'Maaji, I'm sorry but he was misbehaving with me,' the girl apologized, close to tears.

'Sorry to interrupt, but it is you and your son who need to be sorry Maaji, not this little girl,' emerged a heavy voice from behind me. Everyone turned to see who it was, as a tall man made his way ahead. 'This little girl could have been your daughter, your sister, your mother or why, it could have been you! Do not cover up for your son's mistake today. It is mothers who build nations. Let your son learn to respect women, and the womenfolk of his home will be respected.

He helped the girl alight from the bus and helped her into an auto-rickshaw, paying the driver in advance. The man and I both alighted at the next stop. We both entered the temple together too and reached the offering window together. I heard him tell the priest, 'Please make an offering in the name of my mother Ramya Ramkrishnan, Today is her first death anniversary. Please pray for her and distribute 'Kheer' on her behalf to the poor and the needy. Here's the money.

'It is indeed mothers, who build nations,' I thought to myself.

B2 In the process of teaching the topic of 'Reaching the mental intellectual and emotional maturity' from the text, the teacher can guide the children to create their own '**Quote book**' with the following thoughts. These quotes can be written on the blackboard at periodic intervals to develop a **Positive thought** and facilitate **Self Development**, in children.

These quotes are taken from the book 'Secrets for Women' by J. Donald Walters.

Quote 1

'Expand your capacity for loving into impersonal love for all humanity, for all life'

Quote 2

'Service to others is not an indignity. It is a privilege for, by joyful service, one renounces the pettiness of pride and thereby attains inner freedom'

Quote 3

'Whenever we belittle others, we expose to them our own insecurity. Graciousness to all is the echo of inner victories'

Quote 4

'What we affirm in our hearts determine what we become. If we concentrate on littleness we ourselves become petty but if we concentrate on high thoughts and high ideals, we ourselves achieve greatness'

Quote 5

'Let your feelings be guided by wisdom and your emotions by selfless love'

Quote 6

'True beauty is a radiance outward from within. It comes from kind, happy thoughts, and from virtuous qualities. Beauty is not the outer mask, a person wears to please the world. It is erroneous to make a cult of youth. Every age has its intrinsic beauty'.

Quote 7

'Untruth has no lasting power'

Quote 8

'Be concerned not with pleasing others, but with being a sincere friend to them.'

Quote 9

'Be fair when conversing with others, try to understand and respect their point of view'

Quote 10

'Act more, react less. Emotional reaction only clouds reality. Pace your behaviour on what you feel is right and true. Base it on what your believe will be of the greatest benefit to everyone,'

Quote 11

'Be true to yourself and less concerned about what others think of you. Don't accept their definition of you but grow into a self-worthy individual, of your own'.

The teacher should discuss and explain these quotes in the class in order to develop a value based positive mind-set amongst the children who are at their onset of teenage years.

B3. In order to emphasize and create an impact on teenage children regarding saying ‘No’ to drugs, alcohol and smoking, some of the bad influences which exist in our society teacher can introduce the **Theory of Cellular Memory** to create an impact upon them

The theory of cellular memories states that, memories as well as personality traits, are not only stored in the brain but may also be stored in various organs. In 2009, Harvard Medical school defines cellular memories as “A sustained cellular response to a transient stimulus”. Basically, when a cell is introduced to a specific stimulus, it will react in a certain way and every time it is given this stimulus, it will have the same response.

A few stories where organ transplants have occurred can help them to understand the concept of cellular memory.

Story 1

A woman named Claire Sylvia, in her seventies, underwent a heart and a lung transplant from an eighteen-year-old boy, who had died in a motorcycle accident. After her surgery Sylvia had cravings she never had before, like beer and burgers. After some time, she contacted the family of her donor and was in shock to know that the donor had enjoyed the same foods when he was alive.

Story 2

An eight-year-old girl who had received ten years old girls’ heart, after her operation, began to have night mares of a man trying to kill her. Her dreams were so clear that she went to a psychiatrist who actually believed they were real. It was found that the donor was murdered and the recipient who had the nightmares, described the man in such detail that the police were able to find the killer and he was convicted of murder.

Using the above stories as a base, the teacher can tell children on how the body gets addicted to wrong influences like Smoking, Alcohol and Drugs and have a detrimental effect on their life. Many bad influences in the society, try to take advantage of young teenagers by introducing them to these wrong influences.

It usually starts off as a small challenge to our mind and seems pretty harmless. So, most of the teenagers think that nothing is wrong if I try this just once or twice. But soon enough due to cellular memory it becomes an addiction wherein people find it difficult to come out of it. In most cases the brain understands that these habits are not good for the body in the long run. Children usually come under the influence of these vices due to either peer pressure or people trying to make huge sums of money by introducing children to these vices because they know that these children have most vulnerable susceptible mind and will fall prey to these addictions.

CASE STUDY

Children can do Case study of how one alcoholic person in the family creates financial as well as emotional problems for the rest of the family members.

V. Assignments

C1. The essay on the Good and Bad influences in the society will help the children to identify the positive and negative influences and become aware of the same. Once the awareness is developed children can be made to understand the perils of negative influence and therefore imbibe the positive influences and develop into a better personality.

C2. The scientific knowledge of how the sex of a child is determined can help a child to understand at a very young age, that the entire misconception in the society that a woman is responsible for a male or female child can be removed.

C3. The importance of the Woman as Janani is required to be understood as they have a very significant and equal role in family and both Man and Woman should be considered as equal, apart from their biological difference. If they understand how important it is to respect a woman then they will automatically help to form a better society.

Resources

References:

- Chicken Soup for the Soul (Indian Mothers) compiled by Jan Canfield, Mark Victor Hansen and Raksha Bharadia. Specific story by Divya Nair Hinge.
- ‘Secrets for Women’ by J. Donald Walters.

Resources for Teachers:

Book: NCERT Class VIII Science text book

Topic	Values / Life skills integrated & imbibed	Activities
Force and Pressure	<p>Core Values considered : Gratitude, Hard work and Courage</p> <p>Other Sub-Values: Self-motivation, Confidence, Inner peace , Determination and Concentration</p> <p>Life skills: like Scientific temperament and logical thinking skills.</p>	<ol style="list-style-type: none"> 1. This is a demonstration cum discussion activity that helps the children to understand the importance of inner peace and relaxation. Refer B.1. 2. This is a demonstration which teaches the importance facing life with courage and confidence. Refer B.2. 3. Home assignment that helps the children+E11 to enhance their scientific temperament and logical thinking skills.. Refer.C.1.

Materials / Resources needed

- 1) Some carrom coins and a striker, A coin and some clay, A balloon and a plastic bottle.
- 2).NCERT text book class VIII.

Description (of the points of discussion)

This chapter discusses about nature of force, its effect ,how pressure is related to force, atmospheric pressure etc.

The topics discussed are

- The nature of force and understand that forces are due to an interaction.
- The different effects of force on the state, shape, speed and direction of an object.
- Two main types of forces namely contact and non-contact forces, along with their examples.
- Relate and apply knowledge about pressure and how force is related to pressure.
- Pressure is exerted by liquids and gases on the walls of their containers.
- Atmospheric air also exerts pressure which is known as atmospheric pressure.
- A force is required to change the state of an object and also to change its direction just like hard work and determination is required for steering oneself to reach one's goal. Some other values which can be highlighted are self-motivation and concentration.
- Correlate the concept of atmospheric pressure with challenges in life and understand that one should face these challenges with courage and try to find solutions to all the problems.
- Challenges in life can be converted into opportunities just like atmospheric pressure turns out to be very helpful in many situations.

Unit 11**Force and Pressure****Gratitude, Hard work and Courage****I. Introduction**

In physics, a force is the push and pull of matter with mass. A force on a body can cause many effects like change in state of rest or motion, change in size or shape of the object, change in direction of motion etc. This chapter discusses about nature of force, its effect, how pressure is related to force, atmospheric pressure etc.

Through this chapter teacher can encourage students to do hard work with concentration and determination. While explaining atmospheric pressure and its applications in day today life teacher can correlate the concept with challenges in life and encourage children to face these challenges with courage and try to find solutions to all the problems

. The core values focused upon are Gratitude, Hard work and Courage along with sub values such as Self-motivation, Confidence, Inner peace , Determination and Concentration .

II. Learning Objectives / Outcomes

Through this unit, students will achieve the following grade appropriate academic and value based goals.

- Explore interesting facts about the nature of force and understand that forces are due to an interaction.
- Learn about the different effects of force on the state, shape, speed and direction of an object.
- Recall the two main types of forces namely contact and non-contact forces, along with their examples.
- Relate and apply knowledge about pressure and how force is related to pressure.
- Understand the fact that pressure is exerted by liquids and gases on the walls of their containers.
- Know that atmospheric air also exerts pressure which is known as atmospheric pressure.
- Realise that a force is required to change the state of an object and also to change its direction just like hard work and determination is required for steering oneself to reach

one's goal. Some other values which can be highlighted are self-motivation and concentration.

- Correlate the concept of atmospheric pressure with challenges in life and understand that one should face these challenges with courage and try to find solutions to all the problems.
- Realise that challenges can be converted into opportunities just like atmospheric pressure turns out to be very helpful in many situations.

III. Process & Action Plan

Teacher can instill confidence and courage in the minds of children by correlating these values with the activities listed here. This chapter also helps to educate children about the importance of gratitude in life and also hard work and determination.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:
Demonstration cum Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Inner peace

This is a demonstration cum discussion activity that helps the children to understand the importance of inner peace and relaxation. Refer B.1.

2. Courage and Confidence

This is a demonstration which teaches the importance facing life with courage and confidence. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1. Home assignment that helps the children to enhance their scientific temperament and logical thinking skills..
Refer.C.1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** - Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The **core values** being considered are *Gratitude, Hard work and Courage* along with sub values such as *Self-motivation, Confidence, Innerpeace, Determination and Concentration*.

The unit also provides the scope to develop the following skills in the students *like scientific temperament and logical thinking skills*.

IV. Activities & Related Discussion

A. The lesson can be introduced with a context activity. Teacher can place some carrom coins spread out on one end of a table in the classroom. A small circle can be drawn with a chalk on the other end. Let the students use a striker to drive the coins into the circle. This will make it clear to the students that if they want to move the coins from their current position, they need a striker to transfer their force. Teacher can explain that it requires a certain magnitude and direction for force to drive the coins to the destination. This demonstrates that a force is required to move an object or change its direction and it also requires the interaction of the bodies.

If one does not hit the coins with a force they will not move. This means you should be self-motivated to move forward. You need to make a change and push yourself in the direction where you see yourself in the future. If you don't, you will stay exactly where you are. Sometimes we need some others to motivate us, like the striker in the game. That can be our teacher, parents, siblings or friends. Children can be asked to take advice from their well-wishers whenever required and be grateful to them for their motivation and guidance.

Here the teacher can also highlight the importance of hard work. If one does not hit the coins with the required force, they will remain in the same position. The force that moves you and gives you the direction towards goal is your hard work. To achieve anything in your life you should have a motivational force from within and also you should act accordingly. It can also be elaborated that one requires determination and concentration to stick to the path towards one's goal, to achieve success.

Things needed: Some carrom coins and a striker.

B. Activities:

B.1. This is a demonstration cum discussion activity that shows the relationship between force and pressure. Children can be asked to bring some clay and a coin to the class.

Teacher can ask them to push the coin flat and then edgewise on the clay with the same force. The teacher can ask the following questions after the children try the experiment.

- Which one was easier to press, on the flat side or with the edge of the coin?
- Which one goes deeper into the clay ?
- What can be the probable reason for this?

This demonstration clearly shows that as the surface area of contact increases , for a given force, the pressure exerted decreases as per the equation $\text{Pressure} = \text{Force} / \text{Area}$. The teacher can explain that in the first case when the coin was flat the pressure was less whereas in the second case since the contact area was less the pressure was more.

It can be told to students that in life , we may come across various situations where we may have to reel under tremendous stress and mental pressure. But if you have to reduce the effect of such stress, you may have to share your problems with your closest friend or your parents. Just like larger surface area of contact lessens the pressure, when you share your problems with others your mental stress reduces. It is always better to seek support from your near and dear ones to overcome such mental stress to restore your inner peace .Teacher can also give some tips to avoid mental stress and also highlight the importance of relaxing your mind occasionally with the help of yoga and meditation.

Things needed: A coin and some clay.

B.2. This is a demonstration of atmospheric pressure.

- Insert a balloon into an empty plastic bottle. Fold the edge of the balloon around the neck of the bottle.
- Try to blow up the balloon when it is inside the bottle. Teacher can ask the students to note down their observation
- Now cut a small hole at the bottom of the bottle and then blow the balloon. Note down your observation.

Teacher can ask the students for an explanation to their observation. The answer has to do with air pressure. As you blow up the balloon, you are adding more air to the same small space inside the bottle. Soon, the air pressure inside the bottle becomes too great, making it impossible for the balloon to expand. Once you have cut a hole, it should now be possible to expand the balloon. This is because as you add air to the balloon, air will leave the bottle through the hole to make room for the air you are adding to the balloon.

Teacher can touch upon a very important life lesson in this context. He/ She can tell the children that they may face a lot of challenges and external pressure when they try to grow in life. He/ she can advise them not to give up but face all challenges with courage and find ways to overcome it. Here a small hole helped the balloon to expand. In the same way one should try to sort out problems they face and not to run away from it. Then only one can succeed in life. Teacher can inculcate courage and confidence in the minds of the children through this activity and also make them feel that for every problem there is a

solution.

Things needed: A balloon and a plastic bottle.

V. Assignments

C.1. Teacher can ask the children to make a list of three applications where atmospheric pressure acts for our advantage. They can be asked to elaborate on the cases and give scientific explanation for each. In this context the teacher can draw an analogy to make the children understand an important life lesson. They can be told that atmospheric pressure can be compared to the challenges in life that may hinder your progress. Teacher can encourage the children to convert these challenges into opportunities and thus succeed in life. This activity also helps the children to enhance their scientific temperament and logical thinking skills.

Resources

References:

- NCERT Class VIII Science Textbook.
- Following video links can also be used for enhancing the understanding of students if required.
- What is force? <https://www.youtube.com/watch?v=dYreKZYJ xaE>
- Force and Pressure <https://www.youtube.com/watch?v=9tg3csrFVJw>
- Force, work and energy relationship
<https://www.youtube.com/watch?v=PD7a1EWjsTc>
- A force is a push or pull https://www.youtube.com/watch?v=_dcxCdB-s8
- What is Friction? <https://www.youtube.com/watch?v=C7NPD9W0kroS>

Topic	Values / Life skills integrated & imbibed	Activities
Friction	<p>Core Values considered : Determination, Love and Self-control</p> <p>Other Sub-Values: Positivity and Respect</p> <p>Life skills: like Observation and Rational thinking skills.</p>	<ol style="list-style-type: none"> 1. This is a demonstration cum discussion activity that helps the children to understand the importance determination and positivity. Refer B.1. 2. This is a demonstration which urges children to nurture relationships and use love and respect as lubricants to reduce interpersonal friction. Refer B.2. 3. Journal keeping that helps to teach the children determination and will power. Refer.C.1.

Materials / Resources needed

- 1) A marble ,a towel,; A plastic scale and some oil
- 2).NCERT' text book class VIII.

Description (of the points of discussion)

This chapter elaborates on the causes of friction, different types of friction, advantages and disadvantages due to friction and ways to increase or decrease friction.

The topics discussed are

- Friction as a force that opposes motion and how the nature of surfaces affect friction.
- Identify the various types of friction with examples.
- How friction can be advantageous and disadvantageous and various methods to increase and decrease friction.
- Fluids also offer friction to movement and learn how to reduce fluid friction.
- Relate friction to bad habits that creates obstruction in the path to success and how determination and self-control helps to get rid of them.
- How hardships can be beneficial in the path to success and how it motivates to strive even harder with all your strength, just like friction is desirable in some situations.
- It is better to avoid friction in close relationships and how love and respect act as lubricants in such situations.

Unit 14**Friction****Positivity, Love, Self-Control****I. Introduction**

Friction is a phenomenon that we experience daily. When two rough surfaces in contact move against each other, a force is exerted between them that resists this motion which is known as frictional force. This chapter elaborates on the causes of friction, different types of friction, advantages and disadvantages due to friction and ways to increase or decrease friction.

While explaining how friction opposes motion and how to overcome it, teacher can relate it to bad habits in our life. Bad habits create obstruction to one's progress and are difficult to get rid of initially, like static friction. It can also be explained that just like friction can be beneficial in some situations, in life hardships are necessary in our path to success, which helps us to become strong and determined. It can be highlighted that it is better to avoid friction in interpersonal relationships which can be avoided if mutual love and respect are present.

The core values focused upon are Determination, Love and Self-control along with sub values such as Positivity and Respect.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals.

- Describe friction as a force that opposes motion and how the nature of surfaces affect friction.
- Identify the various types of friction with examples.
- Explain how friction can be advantageous and disadvantageous.
- Learn about the various methods to increase and decrease friction.
- Realise that fluids also offer friction to movement and learn how to reduce fluid friction.
- Relate friction to bad habits that creates obstruction in the path to success and how determination and self-control helps to get rid of them.

- Explain how hardships can be beneficial in the path to success and how it motivates to strive even harder with all your strength, just like friction is desirable in some situations.
- Learn that it is better to avoid friction in close relationships and how love and respect act as lubricants in such situations.

III. Process & Action Plan

In this chapter teacher can compare friction with bad habits that hinder progress and also explain how some hardships are beneficial in the path to success and how it motivates you to strive even harder with all your strength. Teacher can urge children to nurture relationships and use love and respect as lubricants to reduce interpersonal friction.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:
Demonstration and Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Determination, Self control and Positivity

This is a demonstration cum discussion activity that helps the children to understand the importance determination and positivity. Refer B.1.

2. Love and Respect

This is a demonstration which urges children to nurture relationships and use love and respect as lubricants to reduce interpersonal friction. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1. Journal keeping that helps to teach the children determination and will power. Refer.C.1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the core approach – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The core values being considered are Determination, Love and Self-control along with sub values such as Positivity, and Respect.

The unit also provides the scope to develop the following skills in the students like observation and rational thinking skills.

IV. Activities & Related Discussion

A. The lesson can be introduced with a context activity to show that friction slows down movement. Roll a marble on a smooth surface like that of the classroom table. Now spread a bath towel on the table and roll the marble on it. Children can be asked to note down their observations in both the cases. Teacher can now explain the concept of friction and how it acts against movement. In this context the teacher can compare friction with bad habits. Our bad habits causes hindrances in our path to success. Getting rid of bad habits is not easy in the beginning, just like friction is maximum when we try to change the state of rest of a body. Initial resistance will be there in changing our habits. But with self-control and determination one can slowly get rid of the bad habits just like static friction reduces to sliding or rolling friction once the body starts moving. This also enhances the observation and rational thinking skills of the students.

Things needed: A marble and a towel.

B. Activities:

B.1. This is an activity that demonstrates that friction is useful in some cases as the saying goes..

“A gem cannot be polished without friction nor a man without trials.” - Confucius.

Teacher can ask the students to hold a smooth plastic scale in their hand. Now apply some oil on the scale. Now ask them to observe the difficulty in holding the scale as the friction has got reduced. This makes the children understand that friction is very useful in helping us hold things. It can be pointed out that, in life, hardships are sometimes beneficial as it motivates one to do hard work with one’s full potential. Just like friction is needed to polish a gem, a person who faces hardships in life evolves into a strong mind and achieves success. Teacher can give the message that always one should face hardships with positivity and consider them as opportunities in life to learn and move forward.

Things needed: A plastic scale and some oil..

B.2. This activity helps children to understand the bad consequences of friction and methods to overcome them. Children can be asked to rub their palms and feel the heat generated. Teacher can convey that the warmth they feel is generated by the friction between the surfaces of their palms. Here it can be told that there is a loss of energy due to friction. In our daily life, we may come across situations that causes friction in our relationships including friendships. It is always better to avoid such friction, since it will harm the relation and also waste our energy and time, which can be utilized for something better. Just like lubricants help to reduce friction, love and respect help to avoid friction in relationships. Children can be asked to always give respect and love to others to keep their relations strong.

V. Assignments

C.1. Teacher can ask students to write about three bad habits they have, which they want to get rid of. Students can elaborate on how they plan to shun these habits and come out of them. They can also be asked to keep a journal to record their progress in achieving their goal. This activity will help to inculcate determination in their minds and encourage them to get rid of their bad habits. This also helps them to judge their own habits and choose only those ones that contribute to their success. For e.g. getting up late in the morning can be considered as a bad habit. This can be changed by exercising will power, but may take some time.

Resources

References:

- NCERT Class VIII Science Textbook.

Topic	Values / Life skills integrated & imbibed	Activities
Sound	<p>Core Values considered: Politeness, Responsibility, Positivity</p> <p>Other Sub-Values: Discipline and Self Control.</p> <p>Life skills: like Observation and Inference skills.</p>	<ol style="list-style-type: none"> 1. This is a demonstration cum discussion activity that helps the children to understand the importance discipline in life. just like that of music. Refer B.1. 2. This is a demonstration which urges children be good communicators and to be polite in their tone of voice, which is important for success.B.2 3. A home assignment which will help to inculcate a feeling of social responsibility in children Refer.C.1.

Materials / Resources needed

- 1)A tub filled with water and a stone, A steel plate and spoon
- 2)NCERT text book class VIII.

Description (of the points of discussion)

This chapter deals with the production and propagation of sound, characteristics of sound like pitch and loudness, difference between noise and music; and how we hear sound.

The topics discussed are

- How sound is produced and propagated through different media and how we hear it..
- Characteristics of sound like amplitude, time period, frequency and their relationships with loudness and pitch. and how to distinguish between audible and inaudible sounds; and also noise and music.
- The harmful effects of noise pollution and various methods for reducing it.
- The importance of positivity and how it propagates from you to others, while learning about the production and propagation of sound energy.
- How to make your life a music; not noise, by practicing discipline and self-control.
- How the tone of your voice can affect proper communication and relations.
- Become responsible citizens by working towards reducing sound pollution.

Unit 13**Sound****Politeness, Responsibility, Positivity****I. Introduction**

Sound is a form of energy that helps us to hear. It helps to communicate with others, not only for humans but for animals also. This chapter deals with the production and propagation of sound, characteristics of sound like pitch and loudness, difference between noise and music; and how we hear sound.

This chapter helps the teacher to explain the importance of positivity and how one's positive mind can influence others and fill their minds with positivity. While teaching the difference between music and noise, teacher can touch upon the fact that when different sound notes are arranged properly in a disciplined and rhythmic manner it becomes music. We should inculcate discipline and self-control in our life which will make it a music rather than a noise. While teaching pitch and loudness, children can also be encouraged to control their voice tone and be polite in their communications. The tone of our voice has a great influence in our communication and hence in relationships. Teacher can also remind the students about their responsibility to educate people about the harmful effects of sound pollution and the ways to minimize it, as good citizens of this country.

The core values focused upon are Politeness, Responsibility, Positivity along with sub values such as Discipline and Self Control.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals.

- Describe how sound is produced and propagated through different media.
- Explain how human beings produce sound and how we hear sound.
- Know about the characteristics of sound like amplitude, time period, frequency and their relationships with loudness and pitch.
- Distinguish between audible and inaudible sounds; and also noise and music.
- Understand the harmful effects of noise pollution and various methods for reducing it.

- Appreciate the importance of positivity and how it propagates from you to others, while learning about the production and propagation of sound energy.
- Know how to make your life a music; not noise, by practicing discipline and self-control.
- Realise how the tone of your voice can affect proper communication and relations.
- Become responsible citizens by working towards reducing sound pollution.

III. Process & Action Plan

Through this chapter teacher gets a chance better to inculcate the virtue of discipline in the minds of children. He/ She can also educate children about how important are communication skills and how to be polite to people by controlling your voice tone.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:
Demonstration cum Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Discipline

This is a demonstration cum discussion activity that helps the children to understand the importance discipline in life. just like that of music . Refer B.1.

2. Politeness

This is a demonstration which urges children be good communicators and to be polite in their tone of voice, which is important for success. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1.A home assignment which will help to inculcate a feeling of social responsibility in children Refer.C.1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the core approach – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The core values being considered are Politeness, Responsibility, Positivity along with sub values such as Discipline and Self Control..

The unit also provides the scope to develop the following skills in the students like observation and inference skills.

IV. Activities & Related Discussion

A. The lesson can be introduced with a context activity. Take a flat tub and fill water in it. Drop a stone in the middle of the water .You can observe ripples in the water which appears to propagate from the centre outwards. Teacher can explain that this is how sound energy is propagated. The vibrations are transmitted as waves in all possible directions . Sound is caused by the vibrations of a body that sets all other neighbouring particles into vibration and energy gets propagated. This can be related to the positivity in us. A mind full of positivity will propagate it to all others around and everybody will get the positive vibe. Teacher can urge children to fill their mind with positivity and spread positivity around them.

Things needed: A tub filled with water and a stone.

B. Activities:

B.1. This is a demo activity to make children feel the difference between noise and music. Teacher can select four of five students and give a steel plate and a spoon to each one of them. Now ask them to hit the plates with the spoon in a random manner. Now teacher can ask the children to hit the plate with the spoon in a rhythmic manner with coordination. The rest of the class can write down their observation. It can be observed that in the first case the activity created noise which was unpleasant for everyone. But in the second case it was pleasant and was music to ears. Here an important thing to note is that in both cases the source of the sound was same. The only difference in the second case was that it was in a coordinated and rhythmic manner.

This demo can be related to our daily life. All of us do mostly the same things everyday. But those who do it in a planned, disciplined way will find their life comfortable and successful, like the music. For others who do not follow a well-disciplined life, they will find it like a noise. It is always better to inculcate the virtue of discipline, in childhood itself.

Things needed: A steel plate and spoon.

B.2. This is another interesting demonstration which the teacher can do in the class. Here we can demonstrate to children the importance of the tone of voice in communication and how it can nurture or ruin relationships. The following sentence can be said in different ways by giving different tones.

“Go, close the door..”

Teacher can say this in various tones like that of anger, happiness, command, request, respect etc. Children can be told that by varying loudness, pitch, pace and emphasis on the words, one can change the feelings conveyed during a conversation. Teacher can urge the students to always talk in a polite tone as it can nurture relations and help one to succeed in life.

Note: If time permits the teacher can show students the video given in the reference.

V. Assignments

C.1. A home assignment can be given to students to list down the sounds that they consider as contributing to noise pollution in their neighbourhood and also the different ways in which it can be reduced. This will help to inculcate a feeling of social responsibility in children. This also helps to enhance the observation and inference skills of the students.

Resources

References:

- NCERT Class VIII Science Textbook.
- Demo video : https://www.youtube.com/watch?v=5hvVjOqk_4o

Topic	Values / Life skills integrated & imbibed	Activities
Chemical Effects of Electric Current	<p>Core Values considered : Teamwork, Self-realization and Honesty</p> <p>Other Sub-Values: Truthfulness and Sincerity.</p> <p>Life skills: like Observation and Reasoning skills.</p>	<ol style="list-style-type: none"> 1. This is an experimental demonstration activity that helps the children to understand the importance of self realization and motivation to identify and nurture one's potential. . Refer B.1. 2. This is a demonstration which urges children to be honest and sincere in their friendships .refer B.2 3. Assignment on preparing a list which helps to improve observation and reasoning skills. Refer.C.1.

Materials / Resources needed

- 1)A beaker to hold water, small button batteries, LED bulbs, tap water, distilled water and salt water, a copper wire, tapes and clips to hold the circuit in place, Copper Sulphate solution, a copper plate, a metal key, cells, and a connecting wire.
- 2)NCERT text book class VIII.

Description (of the points of discussion)

This chapter deals with the chemical effects produced by electric current. It also gives an overview of how liquids conduct electricity and its various regular applications like electroplating.

The topics discussed are

- Some liquids are good conductors of electricity while some others are not. Pure water does not conduct electricity but can be made to conduct electricity by adding acids, bases or salts to it.
- Understand that the passage of electric current through liquids causes chemical reactions which is known as chemical effect of electric current.
- Electroplating is one of the practical applications of chemical effects of electric current.
- Realise the importance of team work while studying the various components that make an electric circuit.
- Know that one's potential can be only be realised and utilised, when one is among the people who can motivate and encourage, just like pure water starts conducting when in company of acids, bases or salts.
- Learn to be honest and sincere like pure gold and not like electroplated articles which looks like gold but in reality are not.

Unit 14**Chemical Effects of Electric Current
Teamwork, Self-realization and Honesty****I. Introduction**

Electricity is an invisible form of energy which manifests itself in the form of various effects it causes like heating effect, lighting effect etc. This chapter deals with the chemical effects produced by electric current. It also gives an overview of how liquids conduct electricity and its various regular applications like electroplating.

Teachers can help children understand the importance of team work while explaining an electric circuit. Another important aspect that can be highlighted is self-realization which means understanding and fulfilling one's own potential. Pure water cannot conduct electricity but if some acid or base is added, it will start conducting. In the same way if you have good people around you who encourages and motivates you, then you can achieve your goals, utilizing your full potential. While teaching electroplating, teacher can point out that one should not be like some gold plated articles which shine like gold but actually are not gold. Teacher can urge students to be sincere and honest in their friendships and also not to be judgmental about people just by seeing their outside appearance.

The core values focused upon are Teamwork, Self-realization and Honesty along with sub values such as Truthfulness and Sincerity.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals.

- Know that some liquids are good conductors of electricity while some others are not.
- Realise that pure water does not conduct electricity but can be made to conduct electricity by adding acids, bases or salts to it.
- Understand that the passage of electric current through liquids causes chemical reactions which is known as chemical effect of electric current.
- Describe electroplating which is one of the practical applications of chemical effects of electric current.

- Realise the importance of team work when students study the various components that make an electric circuit.
- Know that one's potential can be only be realised and utilised , when one is among the people who can motivate and encourage, just like pure water starts conducting when in company of acids, bases or salts.
- Learn to be honest and sincere like pure gold and not like electroplated articles which looks like gold but in reality are not.

III. Process & Action Plan

This chapter helps the teacher to elaborate on values like self-realization and honesty through some scientific demonstrations. The importance of team work can be emphasized when students study the various components that make an electric circuit.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Self Realization

This is an experimental demonstration activity that helps the children to understand the importance of self realization and motivation to identify and nurture one's potential. . Refer B.1.

2. Honesty and Sincerity

This is a demonstration which urges children to be honest and sincere in their friendships.

Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1. Assignment on preparing a list which helps to improve observation and reasoning skills. Refer.C.1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the core approach – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The core values being considered are Teamwork, Self-realization and Honesty along with sub values such as Truthfulness and Sincerity.

The unit also provides the scope to develop the following skills in the students like observation and reasoning skills.

IV. Activities & Related Discussion

A. The lesson can be introduced with a discussion about the components of an electric circuit like the cell, connecting wires, switches, bulbs etc. Teacher can explain that each component plays an important role in the circuit and current can flow only when every component work together. The importance of teamwork can be highlighted to children.

B. Activities:

B.1. This is an experimental demonstration activity. This activity should be done by the teacher or with teacher's supervision.

- Fill a small beaker with distilled water.
- Using electrical wires, connect an LED light and batteries to build an open simple circuit (a circuit with an open end).
- Dip the two open ends into water.
- Now, repeat the experiment using the exact same setup, but this time, instead of using distilled water, use tap water.
- Again repeat the experiment using salt water instead of tap water.
- Children can be asked to note down their observations.

It can be observed that while using distilled water the LED bulb does not light up since the circuit was not complete as distilled water is not a conductor of electricity. In the second case the bulb glows, but not brightly. In the third case the bulb glows very brightly while using salt water, showing that salt has made the water a very good conductor by supplying ions to it.

From this demo, other than the scientific aspect, children can be made to understand that, if you have good people around you who encourages and motivates you, then you can attain self-realization. Such company helps one to achieve one's goals by utilizing the full potential. Words of encouragement and wisdom will make you confident and help you to realize your capabilities. Teacher can urge children to always choose such encouraging and motivating group of friends.

Things needed: A beaker to hold water, small button batteries, LED bulbs, tap water, distilled water and salt water, a copper wire, tapes and clips to hold the circuit in place.

B.2. This is another interesting demonstration which the teacher can do in class.

- Take a metal key and a piece of copper.
- Pour some copper sulphate solution in a beaker.
- Attach the piece of copper to the positive terminal of the battery and the key to the negative terminal.
- Immerse both the key and the piece of copper in copper sulphate solution.
- Allow the current to pass for about fifteen minutes.
- It can be observed that a reddish brown coating of copper will be formed on the key.

This was a demonstration to show how electroplating is done. Teacher can elaborate that electroplating with gold is done on cheaper metals to make them look like gold. As the saying goes 'All that glitters are not gold', one should not judge anybody by their external appearance, just like gold plated articles. Students can be urged to be sincere and honest in their friendships and not to be superficial in behavior, like electroplated articles. It can be told that friendships will often last only if you are true to others.

Things needed: A beaker, Copper Sulphate solution, a copper plate, a metal key, cells, and a connecting wire.

V. Assignments

C.1. Children can be asked to prepare a list of electroplated items which they use or see in their daily life and write down the qualities imparted to the article by electroplating. This will improve the observation and reasoning skills of the children.

Resources

References:

- NCERT Class VIII Science Textbook.

Topic	Values / Life skills integrated & imbibed	Activities
Some Natural Phenomena	<p>Core Values considered : Love, Humility, Courage and Unity.</p> <p>Other Sub-Values: Honesty ,Positivity and Kindness.</p> <p>Life skills: like Disaster management skills.</p>	<ol style="list-style-type: none"> 1. This is chart making activity that helps the children to understand the importance of humility and honesty . Refer B.1. 2. This is a mock drill like activity which urges children to be love, kindness and unity. Refer B.2. 3. Home assignment can be given to prepare a collage which helps to teach the children the importance of courage and also equip them with disaster management skills. Refer.C.1.

Materials / Resources needed

- 1)A plastic comb, pieces of paper and a woolen cloth ,A chart paper and colour pencils
- 2)NCERT text book class VIII.

Description (of the points of discussion)

This chapter elaborates on how some natural phenomena like lightning and earthquakes happen and how to protect and prepare ourselves from these natural disasters.

The topics discussed are

- Charges are acquired by some bodies when they are rubbed with certain other materials and about how these charges behave.
- The process of earthing and how lightning occurs.
- Earthquakes are caused by movement of earth's plates which are unpredictable and how their intensity are measured.
- The safety measures to be taken during lightning and earthquakes.
- The company of some people will fill you with positive energy while interaction with some others accumulate negative energy in you, just like positive and negative charges accumulates in objects when rubbed with some materials.
- Relationships should be nurtured with love and honesty, so that you will have people who care about you, around you, whose hands you can hold to relieve your stress.
- Lightning spares objects which are not tall; likewise, always maintain humility in life to be successful.
- During the time of disaster people forget differences and help each other with kindness and unity.

Unit 15**Some Natural Phenomena
Love, Humility, Courage and Unity****I. Introduction**

A natural phenomenon is anything that occurs on its own in nature without any kind of human intervention. Some natural phenomena can be destructive such as cyclones, thunderstorms, lightning and earthquakes. This chapter elaborates on how some natural phenomena like lightning and earthquakes happen and how to protect and prepare ourselves from these natural disasters.

While teaching about how charges accumulate in objects when rubbed with some other materials, teacher can point out that some interactions fill you with positive energy while some accumulates negative energy in you. It is always better to avoid negativity and embrace positivity, to be in the path to success. Another interesting observation which the teacher can make is that electricity tend to move towards earth and get discharged, which is known as earthing. Likewise, holding the hands of your near and dear ones often will help you to discharge all your frustrations and negative emotions. Children should be made aware that relationships built on values like love and honesty are very important, in leading a happy life. It can be observed that lightning strikes tall objects and spares the low lying ones. In life also it is better to be humble even if you are quite successful. It can be conveyed to students that humanity forgets all ill feelings and differences during the time of a disaster like earth quake; only kindness and unity prevails.

The core values focused upon are *Love, Humility, Courage and Unity* along with sub values such as *Honesty, Positivity and Kindness*.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals.

- Learn about positive and negative charges acquired by some bodies when they are rubbed with certain other materials and about how these charges behave.
- Explain the process of earthing and how lightning occurs.
- Realise that earthquakes are caused by movement of earth's plates which are unpredictable

- Know about how intensity of earthquakes are measured and the extent of damages they cause.
- Learn about the safety measures to be taken during lightning and earthquakes.
- Realise that company of some people will fill you with positive energy while interaction with some others accumulate negative energy in you, just like positive and negative charges accumulates in objects when rubbed with some materials.
- Understand that relationships should be nurtured with love and honesty, so that you will have people who care about you, around you, whose hands you can hold to relieve your stress.
- Realise that lightning spares objects which are not tall; likewise, always maintain humility in life to be successful.
- Appreciate the fact that during the time of disaster people forget differences and help each other with kindness and unity.

III. Process & Action Plan

Teacher can urge children to avoid negativity and embrace positivity, face the challenges in life with courage .In the context of the fact that lightning spares objects which are not tall; always maintain humility in life to be successful.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:
Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Humility

This is chart making activity that helps the children to understand the importance of humility and honesty . Refer B.1.

2. Love, Kindness and Unity

This is a mock drill like activity which urges children to be love, kindness and unity. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1 Home assignment can be given to prepare a collage which helps to teach the children the importance of courage and also equip them with disaster management skills. Refer.C.1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the core approach – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The core values being considered are Love, Humility, Courage and Unity along with sub values such as Honesty, Positivity and Kindness.

The unit also provides the scope to develop the following skills in the students like disaster management skills.

IV. Activities & Related Discussion

A. The lesson can be introduced with a context activity to show the formation of charges on bodies.

- Using a hole puncher, punch many bits of paper and leave them on a flat surface.
- Quickly rub your comb through your hair for 15–20 seconds.
- Lower the comb to the bits of paper.
- Let the students note down their observations.

It can be observed that after rubbing the comb the bits of paper get attracted to the comb. This shows that comb has developed a charge. The teacher can explain that objects develop positive or negative charges when they are rubbed with some materials. In life too, interactions with some people fill you with positive energy while some others results in accumulation of negative energy. It is always better to avoid negativity and embrace positivity, to be in the path to success.

Things needed: A plastic comb, pieces of paper and a woolen cloth.

B. Activities:

B.1. This is a chart making activity that lists the ‘dos and don’ts’ during lightning. Teacher can explain how lightning happens and how the charges move towards earth which acts as an infinite reservoir for charges. Teacher can also explain that charge and discharge are basic causes of lightning. It can be pointed out that electricity always would move towards the earth and gets discharged, which is known as earthing.

Likewise, holding the hands of your near and dear ones will often help you to discharge your frustrations. Children should be made aware of the importance of relationships in life which can be nurtured only through love and honesty. One should

have at least one true friend whom one can confide in, who can take away the stress from you, just like earthing.

While listing the safety precautions one need to take during lightning it can be noted that lightning strikes tall objects first. In this context teacher can urge children to be humble in life even when you are successful. They can be told that humility adds to your greatness and helps you to grow.

Things needed: A chart paper and colour pencils.

B.2. This is a mock drill like activity. Children can be asked to give a live demonstration of what they will do if an earth quake occurs at that moment. This will help children to get some practical inputs on disaster management. Children can be told that during these kind of situations one should think about others also. These are the situations when we have to forget our differences and unite together to help others. The importance of kindness and unity can be highlighted to students.

V. Assignments

C.1. A home assignment can be given to prepare a collage using newspaper clippings or photos of one major earth quake that happened in the world and the extent of the destruction it has caused. This will help to make children aware of their social responsibility to help those who are in distress due to natural calamities. They can also be told that just like earth quakes which are unpredictable, they should be prepared for unexpected setbacks in life, which they should face with courage.

Resources

References:

- NCERT Class VIII Science Textbook.

Topic	Values / Life skills integrated & imbibed	Activities
Light	<p>Core Values considered : Positivity, Adaptability and Courage</p> <p>Other Sub-Values: Flexibility, Social responsibility and Hope.</p> <p>Life skills: Reading and Comprehension skills</p>	<ol style="list-style-type: none"> 1. This is a demonstration cum discussion activity that inculcate positivity in children . Refer B.1. 2. This is a blindfold walking game that teaches children adaptability. Refer B.2. 3. Assignment to prepare a review of the biographies of great people like Helen Keller which will instill courage and hope in the minds of children. Refer.C.1

Materials / Resources needed

- 1)A colour print of Annexure A,: Tables, chairs, umbrellas etc.
- 2)NCERT text book class VIII.

Description (of the points of discussion)

This chapter is a detailed study of reflection, laws of reflection, image formations by mirrors, structure of our eyes and about visual impairment.

The topics discussed are

- The laws of reflection and the images formed by plane mirror. and the difference between regular and diffused reflection.
- Multiple reflection and the images formed by two plane mirrors kept at different angles.
- How dispersion of white light occurs and the various phenomena associated with it.
- The structure of our eyes and know how to care for our eyes.
- The importance of seeing life in a positive angle while learning the laws of reflection.
- How adaptability and flexibility helps one to overcome challenges in life just like a visually impaired person develops his other senses more sharply.
- The importance of courage and hope in life which can be understood from the life stories of great personalities like Helen Keller.

Unit 16**Light****Positivity, Adaptability and Courage****I. Introduction**

Light is a kind of electromagnetic radiation that helps us to see objects. This chapter is a detailed study of reflection, laws of reflection, image formations by mirrors, structure of our eyes and about visual impairment.

This chapter helps children to understand more about perception and experience. While teaching the scientific concept that angle of incidence is equal to the angle of reflection, teacher can touch upon the fact that you see things based on the angle at which you look at it. Your perception about something or some incident depends upon which angle you see it. A positive attitude is very important in life to move ahead. The next important life lesson, which the children can learn, is adaptability. A visually challenged person develops his/ her other senses more sharply to interact with the environment, which is a good example of flexibility and adaptability. Teacher can try to inculcate courage and hope in the minds of children by narrating inspiring biographies of personalities like Helen Keller and Ravindra Jain.

The core values focused upon are Positivity, Adaptability and Courage along with sub values such as Flexibility, Social responsibility and Hope.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals.

- Learn the laws of reflection and the images formed by plane mirror.
- Differentiate between regular and diffused reflection.
- Know about multiple reflection and the images formed by two plane mirrors kept at different angles.
- Describe how dispersion of white light occurs and the various phenomena associated with it.
- Describe the structure of our eyes and know how to care for our eyes.

- Realise the importance of seeing life in a positive angle while learning the laws of reflection.
- Learn about how adaptability and flexibility helps one to overcome challenges in life just like a visually impaired person develops his other senses more sharply.
- Realise the importance of courage and hope in life from the life stories of great personalities like Helen Keller.

III. Process & Action Plan

This chapter helps the teacher to make children understand more about perception and experience. The next important life lessons the teacher can elaborate is adaptability. A visually challenged person develops his/ her other senses more sharply to interact with the environment, which is a good example of flexibility and adaptability.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:

Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Positivity

This is a demonstration cum discussion activity that inculcate positivity in children . Refer B.1.

2. Adaptability

This is a blindfold walking game that teaches children adaptability. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1. Assignment to prepare a review of the biographies of great people like Helen Keller which will instill courage and hope in the minds of children. . Refer.C.1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The **core values** being considered are *Positivity, Adaptability and Courage* along with sub values such as *Flexibility, Social responsibility and Hope*.

The unit also provides the scope to develop the following skills in the students like *reading and comprehension skills*.

IV. Activities & Related Discussion

A. Teacher can introduce the lesson based on a discussion on how we are able to see objects. Take the students to a dark room where no direct sunlight reaches. Now reflect the sunlight from outside into the room using a mirror. The light gets reflected on the mirror and then enters the room and brings visibility in the room. This shows that light can be redirected into different directions by reflecting it.

B. Activities:

B.1. This is a demonstration cum discussion activity. Teacher can take a colour print of the picture given in annexure A. After showing the picture teacher can ask the students whether the two blocks are of the same colour or not. If they are not sure let them put their finger over the line where the boxes meet. From the observations it can be understood that what you see may not be what is real. It depends upon which angle you see the object. Like the fact that angle of incidence is equal to angle of reflection, what you see depends on what angle you see things. If you have a positive outlook in life everything turns out to be positive and if you are negative then everything will turn out to be adverse. Children can be told that they should always have a positive approach to everything in life.

Things needed: A colour print of Annexure A.

B.2. This is a blindfold walking game. Draw a track to some corner of the classroom, which is the finishing point of your game. Keep some objects like tables, chairs, umbrellas etc. in the path to the finishing point. Now blindfold a student and ask him/ her to walk carefully to the finishing point. Allow the participant to inspect the position of various obstacles kept on his/her path before the game starts. Give him three chances to complete the game. It can be observed that he/ she will be able to reach the finishing point, with easiness improving with each attempt. This is because we learn from our

experiences, become adaptable to situations and develop our other capabilities so that we can reach our goal faster. Teacher can advise students that we should learn from our experiences and be flexible and adaptable to situations so that we can go ahead in our life. A blind person develops his other senses to overcome his/her disadvantage and thus adapt himself to move forward and become successful. This game also helps to improve the observation skills of the students.

Things needed: Tables, chairs, umbrellas etc.

V. Assignments

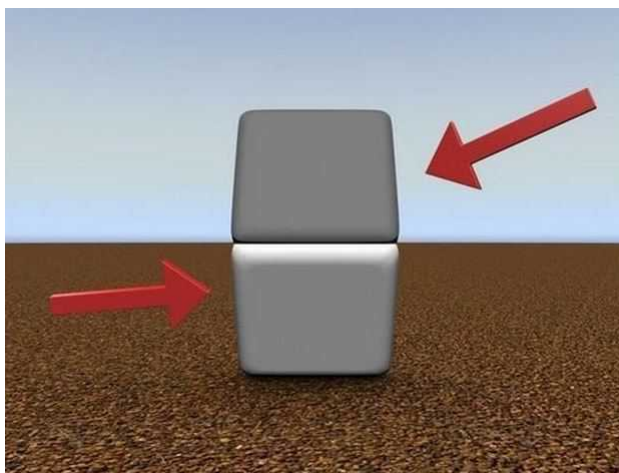
C.1. Teacher can ask the children to read and write a review of the biographies of visually challenged people like Helen Keller who had overcome their difficulties with courage and hope, to be successful in life. Children can be told that they should forget their shortcomings and face the world with courage and hope that will help them to move forward in the path to success. This assignment will also help to improve the reading and comprehension skills of children.

Resources

References:

- NCERT Class VIII Science Textbook.

ANNEXURE - A



Topic	Values / Life skills integrated & imbibed	Activities
Stars and the Solar System	<p>Core Values considered : Equality, Gratitude and Hope</p> <p>Other Sub-Values: Positivity and Confidence</p> <p>Life skills: Creativity and Scientific skills.</p>	<ol style="list-style-type: none"> 1. This is a demonstration cum discussion activity which helps to inculcate values like gratitude and positivity. Refer B.1 2. This is a sky watching activity which helps children to understand the importance of positivity and hope in life and encourages them to face life with confidence. Refer B.2. 3. Assignment to prepare a button model of solar system which helps to enhance the creativity of students. Refer.C.1.

Materials / Resources needed

- 1)A white ball and torch, Chart Paper and buttons of different sizes and colours.
- 2).NCERT' text book class VIII.

Description (of the points of discussion)

This chapter gives an overview of our solar system and also elaborates on stars, planets, satellites constellations and artificial satellites

The topics discussed are

- Positions of the moon in its orbit and its corresponding phases.
- The various stars and constellations in the sky.
- The various planets in our solar system and their peculiarities.
- The importance of artificial satellites.
- Sun teaches us equality, sharing and caring. It shares its energy equally to all its neighbours.
- Be grateful to all those who help us to succeed in life , just like sun helps the moon to shine.
- We also have ups and downs in life like the different phases of moon , but should never lose hope and positivity.
- Be like the moon, feel confident about ourselves, because despite being flawed, the moon outshines the stars and planets in the night sky.

Unit 17**Directions****Willpower, Determination****I. Introduction**

Humans' view of the solar system has evolved as technology and scientific knowledge have increased. Our planetary system is located in an outer spiral arm of the Milky Way galaxy. Beyond our own solar system, we have discovered thousands of planetary systems orbiting other stars in the Milky Way. This chapter gives an overview of our solar system and also elaborates on stars, planets, satellites constellations and artificial satellites.

This chapter gives teacher an opportunity to highlight values like equality, gratitude, positivity, confidence and hope. Teacher can touch upon the fact that sun treats everybody equal and shares its energy with everyone around. It can be noted that like the moon which cannot shine on its own we all require help from others to move ahead in life. Teacher can urge children to be grateful to all those who help them to succeed. It can also be highlighted that just like the different phases of moon, our life can also have ups and downs. But we should never lose hope and should face any adverse situation with positivity. Like the moon, we should feel confident about ourselves because despite being flawed it outshines the stars and planets in the night sky.

The core values focused upon are Equality, Gratitude and Hope along with sub values such as Positivity and Confidence.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals.

- Describe moon and positions of the moon in its orbit and its corresponding phases.
- Know about stars and identify constellations in the sky.
- Learn about the various planets in our solar system and their peculiarities.
- Understand the importance of artificial satellites.
- Realise that sun teaches us equality, sharing and caring. It shares its energy equally to all its neighbours.

- Learn to be grateful to all those who help us to succeed in life , just like sun helps the moon to shine.
- Understand that we also have ups and downs in life like the different phases of moon , but should never lose hope and positivity.
- Learn to be like the moon, feel confident about ourselves, because despite being flawed, the moon outshines the stars and planets in the night sky.

III. Process & Action Plan

This chapter helps teacher to encourage creativity of the students and also inculcate values like equality, gratitude and hope. Teacher can urge children to be grateful to all those who help them to succeed. . It can also be highlighted that just like the different phases of moon, our life can also have ups and downs. But we should never lose hope and should face any adverse situation with positivity.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:
Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Gratitude and Positivity

This is a demonstration cum discussion activity which helps to inculcate values like gratitude and positivity. Refer B.1.

2. Hope, Confidence and Positivity

This is a sky watching activity which helps children to understand the importance of positivity and hope in life and encourages them to face life with confidence. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1. Assignment to prepare a button model of solar system which helps to enhance the creativity of students. Refer.C.1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** - Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The **core values** being considered are *Equality, Gratitude and Hope* along with sub values such as *Positivity and Confidence*.

The unit also provides the scope to develop the following skills in the students like *creativity and scientific skills*.

IV. Activities & Related Discussion

A. The lesson can be introduced with a discussion about the sun and the planets. Teacher can start the lesson with an activity to make the children understand the size and vastness of solar system. The teacher should play the role of the Sun. Give each student (or group of students) a planet, and instruct them to take a certain number of steps away from you, representing the true distance of that planet from the Sun. For example, the student representing Neptune should take 78 steps away from you. The child holding the Uranus model will take 50 steps in the same direction as Neptune. Continuing to follow the same path, Saturn will take 25 steps, Jupiter will take 13, Mars will take 4 steps, Earth will take 3 steps, Venus will take 2, and, finally, Mercury will take only 1 step. This activity will help students to know the positioning of each planet and how sun is the most important entity here. Teacher can also elaborate on the fact that it is the sun's gravitational pull that keeps the planets in their orbits and the ideal distance of earth from the sun is the reason for life on earth.

Teacher can make children understand the importance of equality, sharing and caring, while describing the role of sun. It may provide light to us at a different time each day depending on where we are located, but it shares and distributes its light in a remarkably even and fair fashion.

B. Activities:

B.1. This is a demonstration cum discussion activity. Teacher can demonstrate the phases of moon with a white ball and a lamp or torch. Illuminate the ball with the torch light and ask the students what shape the illuminated portion looks like, from where they are sitting. This works best if you have the students in a semi-circle so that there are different answers depending on where they are sitting. This demonstrates two things to the students. First it helps the students to understand that it is the sun's light that makes the moon shine and the second fact that moon does not change its shape. It appears to be

changing from full moon to new moon due to the relative positions of sun, earth and moon.

Just like the moon cannot shine on its own but requires sun's light for it to glow, we need help from many others to achieve success. Our parents, friends, teachers etc. play an important role in our journey to success. Teacher can urge the children to always be grateful to all those who have supported them in their life and not to forget their contributions. Another interesting life lesson the teacher can point out is the importance of positivity in life. Moon goes through different phases just like life has ups and downs. But one should not lose hope in life and always keep a positive attitude.

Things needed: A white ball and torch.

B.2. This activity will trigger the curiosity of children towards space exploration. Teacher can ask the students to observe the sky for at least one week from a full moon day and note down the celestial bodies they see in the sky like prominent stars, planets, constellations etc.. This will encourage the children to start star gazing and get interested in astronomical science and space exploration. Teacher can point out an interesting fact which the children can relate to themselves. Ask children about the brightest object they see in the sky. Despite being flawed, inconsistent in its shape, dependent on other for its glow, moon seems to be the brightest, even though much powerful stars and other bodies are there in the sky. The moon represents hope and the importance of staying confident no matter how dark everything is. Likewise, children should be told that they should always remain confident, even though they may have some drawbacks.

V. Assignments

C.1. Teacher can ask the children to prepare a button model of solar system using buttons of different sizes and Colours based on the relative sizes of the planets. This will help to improve the creativity and the scientific skills of the students.

Things needed: Chart Paper and buttons of different sizes and Colours.

Resources

References:

- NCERT Class VIII Science Textbook.
- Context activity reference:

<https://www.thoughtco.com/solar-system-games-activities-4171506>.

Topic	Values / Life skills integrated & imbibed	Activities
Pollution of Air And Water	<p>Core Values considered : Simplicity, Responsibility and Environmental awareness.</p> <p>Other Sub-Values: Curiosity</p> <p>Life skills: like General awareness, Observation and Presentation skills, Investigative and Inference skills.</p>	<ol style="list-style-type: none"> 1. This is a case study on air pollution which helps to sow the seeds of curiosity in the minds of the children. Refer B.1. 2. This is a write up preparation which helps children to understand their social responsibility..Refer B.2. 3. Assignment on recycling of materials that improves the observation and presentation skills of the students. Refer.C.1.

Materials / Resources needed

1)NCERT text book class VIII.

Description (of the points of discussion)

This chapter elaborates on the causes of air and water pollution, some typical case studies, human activities leading to pollution and what can be done to reduce pollution.

The topics discussed are

- Air pollution, its causes and how to avoid pollution.
- How the beauty and strength of Taj Mahal is getting affected by air pollution.
- Greenhouse effect and the methods to reduce its impact.
- How water gets polluted and how to recycle and reuse water.
- Importance of protecting the environment and be aware of our social responsibility to avoid polluting the environment.
- It is better to lead a simple life thus contributing very less to garbage and pollution.
- Be aware of the 3 R's of environmental protection -Reduce, Reuse and Recycle.

Unit 18**Pollution of Air And Water****Simplicity, Responsibility and Environmental awareness****I. Introduction**

Pollution is the introduction of harmful substances or products into the environment. Pollution is spreading at an alarming rate, like wildfire in many regions of the world. The two most significant types of pollution are air and water pollution. Knowing about pollution is mandatory for every student. In order to become a responsible citizen, everyone should know about human activities that contribute to pollution.

This chapter elaborates on the causes of air and water pollution, some typical case studies, human activities leading to pollution and what can be done to reduce pollution. Through this chapter teacher can make students become aware of the importance of protecting our environment. They can also be educated regarding their social responsibility towards protecting the environment. Teacher can also help to inculcate values like simplicity in life in the minds of children.

The core values focused upon are Simplicity , Responsibility and Environmental awareness along with sub values such as Curiosity.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals.

- Describe air pollution, its causes and how to avoid pollution.
- Realise how the beauty and strength of Taj Mahal is getting affected by air pollution.
- Explain greenhouse effect and the methods to avoid it.
- Know how water gets polluted and how to recycle and reuse water.
- Realise the importance of protecting the environment and be aware of our social responsibility to avoid polluting the environment.
- Know that it is better to lead a simple life thus contributing very less to garbage and pollution.
- Be aware of the 3 R's of environmental protection -Reduce, Reuse and Recycle.

III. Process & Action Plan

In this chapter teacher gets a chance to educate children about their social responsibility and responsibility towards environment. He/ She can try to inculcate values like simplicity in children ,thus helping to reduce garbage and hence reducing the adverse effect on environment.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart below:

A. Introduce the context activity:
Discussion. Refer A



B. Carry out the varied activities in class (given below) in the sequence specified.



1. Curiosity

This is a case study on air pollution which helps to sow the seeds of curiosity in the minds of the children. Refer B.1.

2. Environmental Awareness and Social Responsibility

This is a write up activity which helps children to understand their social responsibility. Refer B.2.



C. Aid generalization of the concepts learnt, through assignments (given below).



1. Assignment on recycling of materials that improves the observation and presentation skills of the students.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the **core approach** - Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The **core values** being considered are *Simplicity*, *Responsibility* and *Environmental awareness* along with sub values such as *Curiosity*.

The unit also provides the scope to develop the following skills in the students *like general awareness, observation and presentation skills, investigative and inference skills*.

IV. Activities & Related Discussion

A. This lesson can be introduced with a discussion about the constituent gases in the atmosphere. Teacher can elaborate on pollutants in the atmosphere and their main sources. He / she can classify the pollutants into two groups - those contributed by humans and those from other sources. This will help students to get a better insight into the role of human beings in polluting atmosphere. Teacher can give an overview of the different ways in which we can reduce our contribution to pollution. Let the children make a list of things they can do to reduce the impact of pollution as shown below:

- Come to the school by walking or cycling or pooling a vehicle or in school bus.
- Reduce the use of air freshener sprays.
- Advocate no smoking to others especially in public places.
- Avoid burning of plastic waste.
- Plant a tree whenever possible.
- Reduce or Avoid use of plastic carry bags.

This will instil a feeling of social responsibility in the minds of the children. They should be made aware that small contributions on their part makes a huge difference. Children should also be urged to lead a simple life generating less garbage and thus less pollution.

B. Activities:

B.1. Children can do a case study on air pollution in the capital city of New Delhi. They can identify the causes of high air pollution levels in Delhi which is a national concern, and suggest different ways to reduce it. They can also study about the air quality parameters of their city and also compare it with the permissible limits. This activity is meant to enhance curiosity and general awareness of children. This will also improve the

investigative and inference skills of students.

B.2. Teacher can ask students to prepare a writeup on 'Namami Gange Programme', which is an Integrated Conservation Mission, approved as 'Flagship Programme' by the Union Government in June 2014 with a budget outlay of Rs.20,000 Crore, to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of the National River- Ganges. This activity will help children to know about the various initiatives taken by the government to protect the water bodies in our country. This will enhance their general awareness and also instill a feeling of social responsibility in them.

Note: Children can be encouraged to include newspaper cuttings, pictures etc. in their writeup.

V. Assignments

C.1. Teacher can give a recycling assignment to students. They can demonstrate a recycling idea of any house hold item, in the class. This activity will improve the observation and presentation skills of the students and also convey the importance of 3 R's -Reduce, Reuse and Recycle.

Resources

References:

- NCERT Class VIII Science Textbook.

SCIENCE

Grade VIII

Integration of Values

Teacher's Manual

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