

Appendix_3.1

Letter for Permission in School of Experimental Group

Neela Nandan Dongre

H-155 Akanksha Duplex

Samta-Lakshmipura Road

Subhanpura, Vadodara

26-8-2010

To,

The Managing Director,

Jeevan Sadhana Trust. Vadodara,

Shri. Sheetal Sanatbhai Mehta

Respected Sheetalbhai,

As you are aware about the fact that the pattern of education in India is changing from **Teacher Centered** approach to **Student Centered** approach. Our honorable HRD minister has directed we teachers to focus on '**Learning to Do**', '**Learning to live together**', '**Learning to be**' instead of the sole focus on '**Learning to know**'. The state board has announced major change in the pattern of examination. More the objective type questions more will be the need for in depth understanding of the subject. The same I wish to do through the doctoral study by providing various learning experiences to the students instead of the old chalk and talk method. I would like to choose the **class IX** students of Jeevan Sadhana English Medium High School as the **sample of study**. It is a request to allow me to do so as I have been teaching science in this school since last twenty-four years. I wish that the students of our school should be benefited before any other school utilizes it. During the data collection part of the research work, I shall focus on the science course as prescribed by the Gujarat State Board of Secondary and Higher Secondary Education. I shall utilize two periods out of six periods allotted to me per week for class IX to teach science with Life Skill Approach. The Life Skill Education Program will be

completely based on the syllabus prescribed by the board. The activities designed to develop life skills will be conducted in the school premises only. I myself will provide the material needed for the activities. There will not be any financial burden on the school. I shall shoot the life skill activities done by students whenever needed by my own camera. The research work will not hamper regular teaching in any way. Benefits of the doctoral study to Jeevan Sadhana English medium High School would be,

- 1) In depth understanding of scientific concepts which will lead to high score in the examination.
- 2) Life skill education through teaching of science is a unique idea. Publicity of this can attract admissions to the secondary section.
- 3) The pictures or video film of the Life Skill activities can be used for advertisement.

The detailed tentative program is attached with this letter. I intend to start the work as early as possible. Thanking you in anticipation, for your kind cooperation.

Yours sincerely,

(Neela N Dongre)

Copy to—

- **The Principal**
- **The DEO (Vadodara District)**

Appendix_3.2

Semi Structured Interview

Experimental Group / Control Group School Principal

- Q.1 What is the total Strength of the school?
- Q.2 How many divisions do each standard has?
- Q.3 What are the school timings?
- Q.4 What is the School Index Number?
- Q.5 In which SVS is your school grouped?
- Q.6 Does the school have computer facility with internet?
- Q.7 Does the school have Science Laboratory?
- Q.8 Are all teachers of secondary school professionally trained?
- Q.9 Do you have a playground?
- Q.10 Can I seek the school time table for class IX?
- Q.11 What is the SSC board result of this school for last five years?
- Q.12 What is the cultural profile of class IX?
- Q.13 To which socio-economic class do the students of class IX belong?
- Q.14 What is the achievement score of the students of class IX in Std. VIII?
- Q. 15 Does the school get extra funds and facilities from the government other than teachers' pay?
- Q.16 Does the school get additional financial support from the trust?
- Q.17 What kind of exposure does the students of class IX get in school?
- Q.18 Do students of class IX participate in Science Fair?
- Q.19 Do students of class IX participate in activities of Science Club?
- Q.20 Please Mention other activities in which students of class IX participate.

Appendix_3.3

Jeevan Sadhana High School, Karelibaug, Vadodara

Experimental Group



Appendix_3.4

Letter of Permission to the Control Group School Management

Neela N Dongre

H-155 Akanksha Duplex

Samta Lakshmipura Road

Subhanpura, Vadodara

23-07-2012

To,

The Principal,

Gujarat Vidyut Board Vidyalay

Vadodara

Respected Sir,

I have undertaken doctoral study under the guidance of Dr. R.C.Patel, Associate Professor of the faculty of Education and Psychology of the Maharaja Sayajirao University of Baroda. The title of my study is 'Development of Life Skills through teaching of science'.

The design of my study is pre-test -- post-test, experimental and control group design. The population of the study is class nine students of English medium schools of Vadodara. Your school class nine students have been selected purposively from the population of grant-in-aid English medium schools of Vadodara as a control group. I request you to grant me the permission to conduct pre-test in the first term and post-test in the second term of the class nine students of your school.

Each part of the test needs 70 minutes. I request you to arrange the schedule for the test.

Thanking you in anticipation for your kind co-operation.

Yours sincerely,

N N Dongre

Neela N Dongre

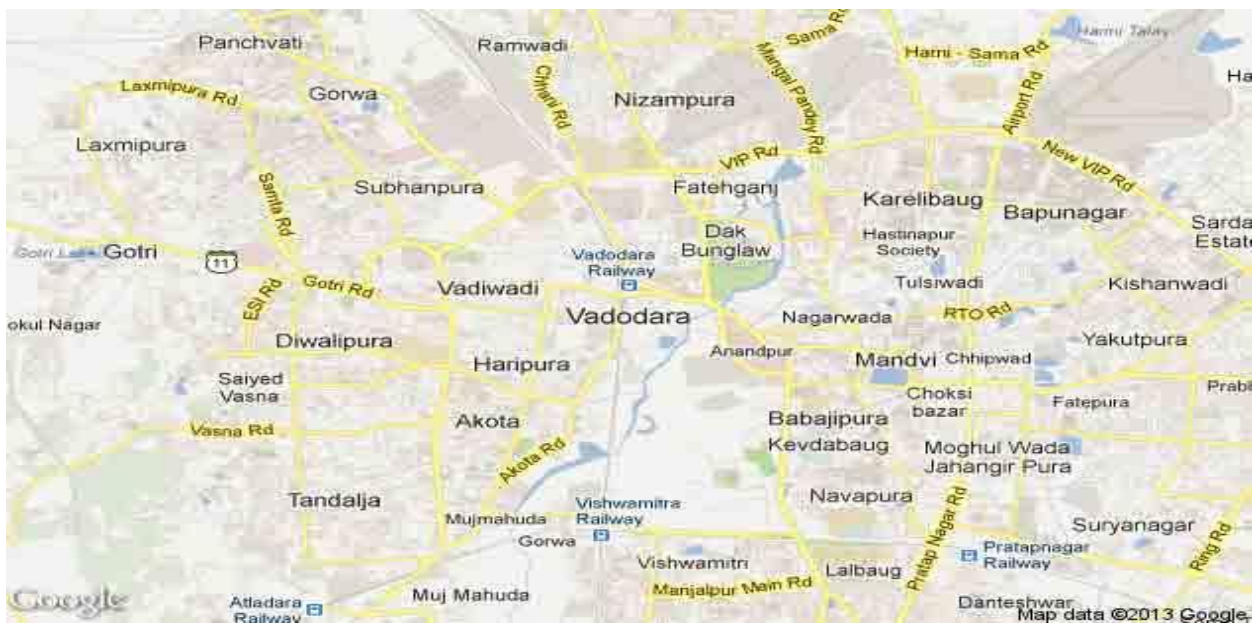
Appendix_3.5

GEB School – Vidyut Board Vidyalay

Control Group School



Map of Vadodara showing West and East of Vadodara city with respect to Railway line



APPENDIX_3.6

List of Experts who validated the Tools and Intervention Program

Prof. R. G. Kothari Department of Education, CASE Faculty of Education and Psychology The M S University of Baroda Vadodara. rgkothari@yahoo.com	Prof. Emirates D. R. Goel Department of Education, CASE Faculty of Education and Psychology The M S University of Baroda Vadodara. Goel_d_34@rediffmail.com
Prof. Deepti Oza Department of Education, CASE Faculty of Education and Psychology The M S University of Baroda Vadodara.	Dr. A. Ramachary Assistant Director, QETP Oxford Educational Institution Oxford Public School, Kandivali West Mumbai. archary@gmail.com
Dr. Kashyapi Avasthi Assistant Professor NEUPA Shri Aurobindo Marg New Delhi	Dr. Jyotsna Amin Department of Education, CASE Faculty of Education and Psychology The M S University of Baroda Vadodara.
Dr. Sheetal Helaiya Department of Education Waymade College of Education	Dr. Prerana Shelat Associate Professor IITE Gandhinagar
Dr. Preeti Chaudhary Department of Education, CASE Faculty of Education and Psychology The M S University of Baroda Vadodara.	Mr. Bhagyesh N Thakkar Principal Vidyut Board Vidyalay Old Padra Road Vadodara.

Appendix_3.7

PRETEST 1

TO STUDY EXISTING STATUS OF CRITICAL THINKING SKILL

Situation One

Once upon a time there lived a king in Hastinapur. He had two children; a son and a daughter. The prince was tall, strong, adventurous and quick. The princess was tall, beautiful, intelligent and sharp. They were trained in the school for using weapons, mathematics, geography, languages, politics and administration. The king grew old and wanted to appoint one of his children as the ruler. The king decided to call his citizens in the court and ask them to choose any one as the future caretaker. The wisest and oldest man of his kingdom was invited to examine the young prince and princess. The royal court was spilling with all the ministers and citizens. Everyone was eager to choose their future caretaker. The wisest man asked the royal youth, “tell me the important duty of the king related to weights, balances and measures.” The Princess didn’t wait for a moment and said, “One of our most ancient texts, ‘Manusmruti’ describes important duty of the king as; the king should examine the weights, balances and measures with standard units preserved in Royal museum. This should be done after every six months to ensure true measurements and mark these with royal stamp.” When the prince was asked the same question, he said, “Our minister will look into the matter. Why should I bother? Ministers are appointed for the administration. The king should always concentrate on expansion of the kingdom.” The wisest man asked further, “what will you do if the rainfall becomes irregular in our country?” The prince immediately answered, “We shall attack the neighbouring country and take water from the river that flows through their territory.” The princess didn’t answer immediately. She was thinking. After a pause she said, “Irregular and insufficient rainfall will create the situation of drought. To address this problem of shortage, our architects and civil engineers will be called for a meeting and measures will be taken to harvest the rain water. The experienced, senior farmers will be invited to seek their advice to search underground stock of water. Secondly, their experience can guide us, to know the plants which can hold large amount of water in the soil. We can also think of new methods of irrigation.” Then the people were asked to vote for their choice of ruler.

*The numbers shown on the right of each alternative shows existence of number of indicators.
If the sample chooses to write own answer it will be evaluated differently.*

Choose the most appropriate alternative to answer the given questions. Tick your choice of answer.

(A) What is the story about?

- 1) Choosing the prince for princess's marriage 1
- 2) Decide who is more powerful? 3
- 3) Choose the appropriate ruler. 4**
- 4) Select the method to store water. 2
- 5) Any other matter

(B) Who is involved in the process of selection?

- 1) Ministers only 1
- 2) Intelligent people of Hastinapur 3
- 3) Old farmers of the state 2
- 4) Ministers, intelligent people and ordinary citizens 4**
- 5) Somebody else

(C) The above story is divided into various incidents. Which is the most correct sequence of incidents?

- a) The wisest man who is oldest is invited.
- b) The court spills with people.
- c) The people are asked to vote.
- d) The royal children are trained to rule the country.
- e) Princess says, "Measures to harvest rain water will be implemented."
- f) The prince points at the minister for correct weights and measures.

Choose the correct sequence of events.

- 1) a), e), f), d), c), b) 2
- 2) d), a), b), f), e), c) 4**
- 3) d), b), a), e), f), c) 3
- 4) a), f), e), c), b), d) 1
- 5) Any other sequence

(D) What is the assumption in this story?

- 1) **The prince is unfit to rule. 4**
- 2) The princess is unfit to rule. 2
- 3) Both the royal children are unfit to rule. 1
- 4) The wisest man can alone rule. 3
- 5) Some other assumptions you think then mention it.

(E) Who do you think must have scored more votes?

- 1) The Prince 2
- 2) **The Princess 4**
- 3) The wisest man 3
- 4) Nobody from the kingdom 1
- 5) Any other person

(F) Whom will you choose as the Ruler? Why?

- 1) The prince, as he is strong and aggressive and the most importantly he is a man. 2
- 2) The princess, because she is intelligent and beautiful. 1
- 3) The prince, as he is strong, has vigor to fight and he is trained. 3
- 4) **The princess because she is well trained to fight, has scientific approach to solve the problem and she is intelligent. 4**
- 5) Write if any other suggestion you have.

(G) Which criteria or information you have kept in mind to arrive at your decision?

- 1) **Training for warfare, intelligence and scientific approach are the basic requirements to be a ruler. 4**
- 2) Only physical strength and warrior spirit are enough to be a ruler. 2
- 3) The ruler can be male/female with great strength and intelligence. 3
- 4) The ruler can be female/male with beauty and intelligence. 1
- 5) Please mention any other criteria if you think.

H) How did you classify the thinking of the prince and princess as?

- 1) Princess thinks impulsively while prince thinks patiently. 2
- 2) Princess thinks scientifically while prince thinks rationally. 3
- 3) Prince thinks properly while princess thinks irrationally. 1
- 4) **Princess thinks scientifically while prince thinks impulsively. 4**

- 5) Any other type of thinking of the Prince and Princess you can classify then mention here.

Situation Two

You are a young man. You have recently cleared the driving test and have succeeded in getting the driving license. It is your birthday and you have got a brand new bike from your father. You are on a joy ride. You pass by the bus stop where you see an old and sick lady who is your friend's mother, waiting for the bus that actually needs immediate treatment by the doctor. A good friend of you who helped you several times at the time of need is helping his mother to take a seat on the bench at the bus stop who is waiting for the bus too. A girl living in the neighborhood, with whom you always wanted to be friendly is also waiting there. You can take only one pillion rider on your scooter.

Choose and tick your choice of answer for the given questions.

A) What will be your first thought?

- 1) Just wave hand at them and drive fast. 1
- 2) **Stop and talk to your friend. 4**
- 3) Stop near the girl and talk to your friend showing your vehicle. 3
- 4) Call your friend loudly, reducing the speed of your vehicle. 2
- 5) Any other thought than the above mentioned if so, then mention it.

B) Will you give lift to any one?

- 1) Yes surely. 2
- 2) I am not sure. 1
- 3) No, I am not confident to take a pillion rider. 3
- 4) **I might think. 4**
- 5) Anybody else?

C) To whom will you give lift?

- 1) **I will ask my friend to take his sick mother to the hospital on my bike and I will chat with the girl while waiting for the bus. 4**
- 2) I shall prefer to give lift to the neighborhood girl. 1
- 3) I will give lift to my friend who helped me in the time of need. 2
- 4) I shall carry the friend's sick mother with me and drop her to the hospital. 3

5) I shall do some other thing. Please mention here.

D) Why will you give lift or your vehicle?

1) The friend's mother is sick and she needs immediate treatment. 4

2) The bus service in the town is unreliable. 1

3) You wish to prove that a friend in need is friend indeed. 3

4) It is a great opportunity to show your skill and nobility to the beautiful girl. 2

5) Write any other reason you think.

Situation Three

Teacher had assigned you some project work. One week time was given to you. Tuesday was the last day to submit the project. Today is Wednesday. Teacher has warned you the day before and has asked you to complete it within one day and submit it on Thursday. You write the assignment with great care and efforts on Tuesday evening, sacrificing the cricket match with friends. While parking your bicycle in the playground on Wednesday morning, a child of lower class hits you as he stumbles on the piece of rock and your assignment file falls in the soil. Your file gets dirty. The lower class child is crying because his knee got scratched very badly and blood is oozing out of it. The elder boys start blaming you for making the younger child cry. The peon is about to ring the first bell for assembly. If you do not put the file in the staff room before the assembly you will lose all the marks.

A) What will be your first reaction?

1) Slap the elder student hard. 1

2) Shout at each one and tell them that it wasn't your fault, it is merely an accident. 3

3) Hit the younger as well as elder student because they spoiled your work. 2

4) Request the elder students to help you both. 4

5) Any other action you might do, please write.

B) What will you do to the lower class student?

1) You will ask him to take care and rush to the staff room to submit the assignment. 3

2) You will shout at him as your file has fallen into the soil due to his carelessness. 2

3) You will help him to get up, and take him to the medical room to apply ointment. 1

4) **You will request your classmate to take care of the younger one and rush to the teacher's staff room to submit your assignment. 4**

5) Write anything else you might do.

C) Your assignment is very dirty now, what will you do?

1) You will cry loudly and complain about this to the concerned teacher. 1

2) **You will shake off the dust and compile the papers properly then submit. 4**

3) You will curse your bad luck and curse everyone around thinking about the punishment you will get. 2

4) You will ignore everything and first submit your assignment as it is. 3

5) Any other actions if you think then mention it.

D) Elder students put the blame on you for making the younger child cry. How will you react?

1) You will argue with them to prove that you are right. 2

2) **You will run away towards the staff room and report this to the teacher. 4**

3) You will take your bicycle, school bag, the assignment go home and come back with your father. 3

4) You will abuse them and vent out your anger. 1

5) Some other reaction you may think then please mention it here.

E) How will you tackle the situation?

1) With calmness. 3

2) With anger. 1

3) With anxiety. 2

4) **With a good thought. 4**

5) Write any other emotion you think.

F) What will you tell the teacher?

1) The younger student pushed your assignment so your assignment is dirty and you were late. 2

2) Your luck is bad so you are late. 1

3) **You met with an accident, so your assignment looks dirty. 4**

- 4) The elder students pushed you, when the younger one started crying and your assignment fell in the soil. 3
- 5) You may tell something else than above mentioned statements.

Situation Four

Your mother has a bag of buffalo milk, she asks you to bring one more bag of milk from the dairy. Some guests are going to visit your home in half an hour and she wants to prepare porridge for them. It is a festival time, milk bags are rapidly sold from the shop so you get the last bag of milk which is cow milk. You ought to buy that bag of cow milk.

A) What should your mother do now?

- 1) She should send you back to return the cow milk. 2
- 2) She should fire you and scold you for not trying somewhere else. 1
- 3) She should boil both the milk bags separately, and then use. 3
- 4) She should mix both 500 ml bags in the same milk pot and boil it. 4**
- 5) If you have any other suggestions then mention here.

B) Do you think that the milk if mixed will get spoiled?

- 1) Yes it will. 2
- 2) No it will not. 4**
- 3) It may get spoiled. 3
- 4) One can't say. 1
- 5) You have thought of something else.

C) Choose the reason for your answer.

- 1) Density of cow milk and buffalo milk is different so it will get spoiled. 3
- 2) Cow and buffalo has different skin color so the milk is different. Hence mixture will get spoiled. 2
- 3) The chemical composition of milk is same whether it is of cow or buffalo so it will not get spoiled provided both the bags are fresh. 4**
- 4) Cow and buffalo both are mammals, so by adding buffalo milk, it will not get spoiled. 1
- 5) Any other reason you think.

Situation Five

Your friend has some beliefs. Teacher asks you to classify the following beliefs into facts and myths. Classify the following into facts and myths.

- 1. A kid's resting pulse rate is faster than an adult's resting pulse rate.**
- 2. Ear wax causes ear infections.**
3. Ear infections are highly contagious.
- 4. Vegetables give us vitamins and salts.**
5. Eating gavar falia (green vetch) makes you duffer.
- 6. Walking helps to circulate the blood in the body.**
7. If you eat the vegetable named bottle gourd, you will become intelligent.
8. Whenever you start from home for some work and the cat crosses you, you should return home, you will not get success.
- 9. The snake has a backbone.**
10. The broom should always be kept horizontal otherwise you will lose money.
11. If boiling milk spills from the pot it is a bad omen. It is an indication of trouble to come.
- 12. The mother crocodile eats her own eggs some times.**

Q. Classify the given statements into FACTS and MYTHS. Write the Serial number of the statement under FACT or MYTH.

In Situation five as shown above the **bold** statements are **facts** and others are **myths**. Correct classification shows presence of at least 3 indicators of Critical Thinking Skill; ability to analyze, ability to categorize and ability to question the assumption behind the statement.

Appendix_3.8

PRETEST 2

TOSTUDY EXISTING STATUS OF CREATIVE THINKING SKILL

Situation One

Your teacher has drawn certain shapes on the blackboard. You are supposed to cut paper of these shapes. Form a picture using these shapes and make a picture card. The shapes drawn on the blackboard are a rectangle, triangle, square, trapezium, hexagon, pentagon and circle with fixed dimensions.

Situation Two

Compose and write a story in two hundred words using the following phrases.

Raja a boy studying in class IX, Alien in the saucer shaped space ship, no-moon day, pitch dark night, streak of light, conversation in Sanskrit between Raja and the alien, nano food, soya bean, rice, some vital change, energy, intelligence, Skylab, scientific research, environmental balance.

Situation Three

Rearrange the living beings in any food chain or friend and foe web or write them in chain with any other criteria. Mention the criteria you decide.

Mango tree, jackal, grass, baby monkey, grasshopper, kingfisher, tiger, frog, eagle, fish in the pond, larva of the insect, Tom with fishing gear, leopard, honey bee, ants and ant hill, spider, Armadillo and hunter with gun.

Situation Four

Draw a pencil sketch to show the global warming.

Situation Five

Suggest a recipe to make **low fat** but **tasty** sandwich with four slices of bread. Choose vegetables and other food components of your choice and write the method to make

the sandwich on a piece of paper. The food products like butter, cheese and ghee are **not to be used.**

Answer the following questions by selecting correct choice or by writing the answer in the space provided.

A) Do you get bored by doing same kind of work?

1. Yes, some times. 1
2. Yes, quite often. 1
3. No, never. 0
4. No, not always. 1
5. Please mention if you have something else to say.

B) Do you get new ideas for doing same old things? Narrate any one situation when you did a thing differently. The situation need not be only in the school it might have happened anywhere else.

1. Yes, I do. 1
2. No, I don't. 0
3. I always have a new idea. 1
4. I am bored to think new. 1
5. Please mention if you have something else to say.

C) Do you feel confident in presenting new idea?

1. No, I am scared. 1
2. No, I get bored. 0
3. No, not always. 1
4. No, I am not scared. 1
5. Please mention any other thing if you have to say.

D) Have you generated new ways for doing any project assigned by your teacher?
Give example. **Answer:**

E) Teacher has asked you to make a power point presentation. The first slide should show the name of the topic and names of team members. Suggest absolutely different design for it. Draw the design of a slide. **Answer:**

Appendix 3.9

PRETEST 3

TO STUDY EXISTING STATUS OF DECISION MAKING SKILL

Situation One

Your mother cooks your favorite dishes for your Tiffin every morning. Your mother gives you Rupees fifty as pocket money every month. While giving it, she says that the money is given in case you need it to get your bicycle repaired or to fill air in the tire tube of the bicycle or if at all you need to take an auto rickshaw while coming from the school. She has asked you to save some cash from the pocket money and use it for the assignment paper or stationary if needed. You are aware of the humble (not good) financial condition of your parents. Yet you are happy because your mother takes good care of you.

There is a shopping complex near your school. It has various outlets selling flavored milk, butter milk, coffee, tea, soft drinks and softy ice-cream. Just next to the dairy outlet there is a shop advertising a glass of SODA for five rupees. Next to it is a bakery that sells hot puffs for rupees seven each. Your science teacher has recently discussed the ill effects of having junk food and carbonated drinks on human health. You have seen a demonstration showing reduction in the size of teeth and bone when they were kept in contact with aerated drink. The SODA shop shows variety of flavors which you love to have. It is very sunny and hot when you return home from the school every day. It is extremely tempting to see puffs and cold ginger soda glass especially when senior students are having it.

One of your classmates brings a hundred rupee note every day. He offers you hot puff and a glass of chilled cold SODA almost every day. It is really difficult to say 'no' to the rich classmate. The stylish rich boy does not bring homemade food. During the continuous evaluation process in the school, you have been asked by the teacher to prepare a chart showing the pictures of the causes to fall sick. This work is to be done in the team of five. The project demands rupees fifty in total if you really wish to make it attractive. Such projects are to be done every month for every subject. You have eight subjects; at least five rupees are needed per subject.

A) How will you meet the expenses?

- 1) I shall save all fifty rupees for the projects. 3
 - 2) **I shall plan my contribution for projects differently, may be by writing or drawing work or contributing by giving creative inputs and ask my friends to contribute financially so that I can save some money for having SODA or puff. 4**
 - 3) I shall find a shortcut to earn money and spend the money, in any way I want. 1
 - 4) I shall discuss with my parents and ask them to increase my pocket money. 2
 - 5) If you have any other idea than these, then please mention here.
- B) How should you respond to your rich classmate's offer?
- 1) Accept his offer because he has lot of money. 1
 - 2) Accept his offer because you like him. 2
 - 3) Accept his offer with hesitation telling him that you won't be able to treat him, he shouldn't expect. 3
 - 4) **Accept his offer only when he has offered puff and SODA to all the students in your team. 4**
 - 5) If you think of some other response then please mention.
- C) Should you spend money on the puff and chilled soda and treat the rich mate?
- 1) Yes, if I can save money. 3
 - 2) Yes, if my pocket money is increased. 1
 - 3) Yes, if I earn extra money. 2
 - 4) **Yes, once in a year. 4**
 - 5) Any other time you think, please mention.
- D) Do you feel that your parents show too much stinginess while giving money to you in comparison to the money given to your sister?
- 1) **No, they are impartial. 4**
 - 2) No, they try their level best. 3
 - 3) No, they are very poor. 2
 - 4) No, they will not increase the pocket money because my younger sibling is their favorite. 1
 - 5) If you have something else to suggest please do so.
- E) Will you ask your mother to stop giving homemade lunch pack?
- 1) Yes, because it is out of fashion in the class. 4
 - 2) Yes, because she never gives pizza or pasta or cake. 2
 - 3) **No, because eating homemade food is the healthy way. 5**

- 4) No, because she forces me to take along the lunch box and I can give it to someone else, without letting her know. 3
- 5) If any other thought you have then please mention.

Situation Two

You like a particular television show. Your mother likes another that is shown at the same time. Your father wants to watch NEWS at that time only and grandma wants to watch religious play at the same time on different channel. You have a computer but do not have an Internet connection. You have only one television set. You can't watch the repeat telecast as it is shown in your school time. Father can't watch NEWS otherwise as he is too busy for the whole day.

A) Who should watch television at that time?

- 1) Father, because he is the boss at home. 1
- 2) Grandma, because she is the oldest of all. 2
- 3) I should watch because I can watch it only at that time and News can be watched half an hour later, on another channel. 4**
- 4) Mother, because she cooks food for all. 3
- 5) Any other suggestion you have, please write here.

B) What will you do at that time if your father does not allow you to watch your favorite program?

- 1) I shall request again and again. 4**
- 2) I shall cry before Grandma, she is very kind and always takes my side. 2
- 3) I shall throw tantrums, break glass flower pot. 1
- 4) I shall take out the fuse so that nobody can watch T. V. 3
- 5) Write something else if you think you can do.

C) Why will you take such decision?

- 1) By pleading repeatedly parents will agree. 4**
- 2) Gaining sympathy from Grandma is easy. After all she is the most powerful in the family. 3
- 3) Throwing tantrums scares mummy and grandma so my wish is fulfilled. 2
- 4) If I do not get the chance to see my favorite program then why should anyone else? 1
- 5) Write the reason that first comes to your mind.

D) Who takes most decisions in your life? Why? Choose your choice of answer or write the answer you wish to give reason.

1) Father takes decisions in my life as he is the only earning member. 2

2) Mother takes decisions in my life as she is the boss of the family. 1

3) Parents take decisions in my life as they love me and I am small. 3

4) **I allow them to take few decisions in my life as I love my family and they allow me to share my own thoughts. 4**

5) Write any other answer with your reason.

E) What is your reaction to their decision?

1) They are parents so they will always take decision for my good. 2

2) If they involve me in decision making process I would love it. 3

3) **Small decisions are left to me generally. If decisions regarding health, Outings, movie, picnic, are decided together then I shall be happy. 4**

4) I hate their decisions as I am never consulted. 1

5) Write any other reaction you may exhibit to their decision.

Situation Three

You are the student as well as class representative of your class. One morning the principal called you suddenly after the assembly and asked you to rearrange the seating arrangement of your class so that minimum chaos will be created in the class as your class teacher is on leave and no other teacher can be arranged due to some reason.

A) What will be your first response to yourself?

1) Oh! How can I do it? 0

2) Let me try. 2

3) Too much is expected from me! 1

4) **Ah! I can do it! I know how to go about it. 3**

5) Any other response you have please mention here.

B) How will you feel at that time?

- 1) Quite tensed. 0
- 2) **Good 2**
- 3) Miserable without my class teacher. 3
- 4) Great! Principal knows my capacity! 4
- 5) I don't know. I am confused. 1

C) What will you decide to do?

- 1) Refuse and ask the principal to pardon you. 3
- 2) **I shall do the seating arrangement. 4**
- 3) Principal should do it. I shall not disturb my friends' seating arrangement. 2
- 4) I shall only mind the class and punish the students who talk. 1
- 5) Mention any other decision you will make.

D) Why will you decide so?

- 1) If you change the seating arrangement your friends will be displeased. 3
- 2) **Changing the seating arrangement will help to mind the class. 4**
- 3) Decision of the Principal will keep me away from peer resentment. 2
- 4) Seating arrangement is Class teacher's right. How can I over take her? 1
- 5) Any other reason you think either for following Principal's instruction or refusing it, please mention here.

E) What criteria will you use to rearrange the seating arrangement of your classmates?

- 1) When I shall not do rearrangement, why should I bother about the criteria? 1
- 2) I shall make talkative students sit in front, in the first row. 3
- 3) **I shall make pairs of a studious, serious student with the talkative student. 4**
- 4) I shall make talkative students sit on the floor so that they will not talk and discipline will be maintained. 2
- 5) Some other criteria you think, please mention.

Situation Four:

Your language teacher has taken you to museum. She announces that each team has to find fifty new words from the museum and write in the project file with dictionary meaning of each. Each team consists of ten students. The teams are led by team leaders.

Suppose you are the team leader. There are five boys and five girls in your team. Teacher has declared time limit to finish the job in half an hour. In this time you have to find fifty new words from the museum write their dictionary meaning on the project papers, decorate the file and submit it in time.

A) As a team leader what decisions will you take?

1. You will assign duties to each. 2
2. You will distribute the work as per their suggestions. 3
- 3. You will decide a plan of action with your team members. 4**
4. You will send boys to museum and ask girls to write. 1
5. Write any other suggestion you have.

B) Why will you take such decisions?

1. You are the leader; others should obey your orders. 1
2. You want to complete the task within the time limit given by the teacher. 3
3. You wish to complete the task before every other team. 2
- 4. Your team wishes to complete the task in the time limit and with good grade. 4**
5. Write any other reason you have.

C) Will you chalk out the plan of action by yourself?

1. Yes, as I am the LEADER. 1
2. Yes, too many cooks spoil the broth. 3
3. Yes, I will do it. 2
- 4. Yes, I shall; but before finalizing I shall discuss it, with team members to incorporate valuable suggestions if they have. 4**
5. Write any other action you think than mentioned above.

D) What will be the consequences of your actions?

1. I shall be able to successfully complete the task. 2
- 2. I shall be able to present our team's work in time and get good grade. 4**
3. I shall be able to fetch good grade for our team's work. 3
4. I shall prove to be a popular leader. 1
5. Write any other consequence than mentioned above you think.

E) Choose any one sequence you think is appropriate.

- f) Discuss the problem with team mates assign duties according to their choice and abilities.
 - c) Send some of them to museum for searching new words without wasting time in discussion.
 - d) Some should start searching the meaning in the dictionary.
 - e) After getting five new words the reporter should give those words to the dictionary owners then finding new words, their meaning and writing them on the project paper can be done simultaneously.
 - b) One who is good in drawing and hand writing should start making the project file.
 - g) One student or the leader should start decorating the file papers.
 - a) The leader should co-ordinate the work and assists the needy.
1. c), b), a), d), g), f), e) 3
 2. a), b), c), d), e), f), g) 1
 3. b), c), d), f), g), a), e) 2
 - 4. f), g), c), d), b), e), a) 4**
 5. Write any other plan of action if you have thought.

Situation Five

You are in class nine. You know reading and writing English very well. You are the volunteer of Literacy campaign program. Four weeks time is given to you to conduct the program in ten houses of very low income group people living near your school. You have to ensure that each member of these houses should be able to read and write the alphabets from A to Z and the numbers from one to ten and each one should be able to sign on the paper in English. Decide a plan of action for this work. There are nine other volunteers in your team.

A) Will you need to gather any information before starting the program? Why?

1. Yes, information related to their age, occupation, caste, income should be gathered which will help in designing the Literacy program. 3
2. Yes, information related to their age, occupation only should be gathered that will help to design the Literacy program. 4
- 3. Yes, information related to their educational background, age, occupation should be gathered which will help to design the Literacy program. 5**
4. No, information is not needed to design the Literacy program. 2
5. Anything else is thought by you, should be mentioned here.

B) What will you think of before starting the Literacy program planned by you?

- 1. Time and resources available. 4**
2. Time and technology available. 2
3. Time and man power available. 3
4. Time and money available. 1
5. Anything else you think mention here.

C) Will you think of only one plan of action?

1. Yes, well discussed one plan is enough. 2
- 2. Decision should be taken for one plan keeping alternative plan ready. 4**
3. More than two plans should be ready. 3
4. No, more than one plan is not needed. 1
5. Anything else you wish to mention, please mention here.

D) What will be the most appealing plan of action?

1. Most appealing plan of action will be the one that will help in completing the project in given time. 3
- 2. Most appealing plan of action will be the one that will help to complete the project in given time, addressing all the aspects of the problem, accomplishing the specific objectives of the project in time. 4**
3. Most appealing plan of action will be the one that will fetch good grade. 2
4. Most appealing plan of action will be the one that will make very beautiful project file. 1

5. Anything else you wish to mention please mention here.

E) Which of the following plan of action will be the best?

1. Go to each house, teach reading and writing to illiterates personally. 1
2. Invite all the illiterates to the school computer lab and teach them to read and write. 3
3. Each student should focus on one illiterate and teach on Sunday only. 2
- 4. Count and list all the illiterates from the assigned houses, bring them in school, use all possible resources like manpower, technical support and teach them every day for half an hour after school hours. 4**
5. Mention any other plan of action you think.

Appendix_3.10

PRETEST 4

TO STUDY EXISTING STATUS OF PROBLEM SOLVING SKILL

Situation one:

Your science teacher has posed a problem from the text book of 'Science and Technology' to you and asked to solve it using algebraic equation.

A) Do you think that it is a problem?

1. No, it is not. 3
2. It can never be a problem. 1
- 3. Yes, it is a problem. 4**
4. Yes, it is a very difficult problem. 2
5. Write anything else you might think.

B) What all things do you need to solve the problem?

1. Textbook, notebook, pen. 2
- 2. Textbook, notebook, pen, understanding of concepts. 4**
3. Textbook, notebook, pen, readymade solution book. 3
4. Textbook, notebook, pen, friend's homework notebook. 1
5. Any other thing you think please mention here.

C) What will you do to solve the problem?

1. Copy the solution from the Guide/Digest. 1
2. Revise the concepts related to the problem then make a fresh attempt. 3
3. Copy the process indicated by the solved illustration. 2
- 4. Revise the concepts, the method of addressing the problem then make a fresh attempt. 4**
5. Write here if you have any different idea.

D) Do you need to review the method of solving the problem before you quit?

- 1. Yes, definitely. 3**
2. Yes, may review. 1
3. Yes, if asked. 0
4. Yes, if my answer is wrong. 2
5. Write here if any other thought you have.

Situation Two:

Suppose there are hutments near your school play ground. It is Tuesday and early morning your class is on the play ground for mass drill. Your class students witness drainage water in the play ground.

A) Do you think that getting the playground soil wet is a problem to conduct mass drill on the playground?

1. No, mass drill can be conducted in the vacant space. 1
2. No, it is not a problem, if no mass drill is conducted. 0
3. Yes, it is a problem and it can be tackled after discussion and planning. 2
4. **Yes, it is a problem; to address it, complaint should be registered with the management. 3**
5. Mention any other thing you wish to say.

B) If yes then how will you as a class representative, handle this problem?

1. I shall complain about this to the Principal and the problem will be solved. 1
2. It is the problem of school management, why should we students bother? 0
3. I as a class representative shall discuss this problem with the classmates and the class will go on strike till the ground is clear. 2
4. **The problem will be discussed in the class in presence of sports teacher, principal and class teacher then the plan of action will be thought considering all the factors. 3**
5. Mention any other thing if you wish to say.

C) Arrange the steps that should be followed to solve this problem?

- a) Write all the alternatives to address the problem.
- b) Check the consequence of each alternative.
- c) The process to address the problem is verified.
- d) Define the problem, know its causes and source.
- e) Follow the steps decided to address the problem.

Choose any one arrangement of steps.

1. a), b), c), d), e) 0
2. **d), a), b), e), c) 3**
3. d), e), c), b), a) 1
4. a), d), c), b), e) 2
5. Any sequence of your choice.

D) Which of the following is the most correct method to address this problem?

1. There is no need of mass drill. 0

2. The neighbors living in illegal houses should be first requested to stop the release of drains in the playground warning them of police complaint if they do not take corrective action. 3

- 3. The police complaint should be lodged against them. 1
- 4. The venue of mass drill should be changed. 2
- 5. If you think of something else then please mention here.

E) Stop conducting mass drill or sports on the play ground. This solution is the ultimate Solution, the people living will not understand the importance of cleanliness of playground.

- 1. You completely agree. 0
- 2. You agree to some extent. 1
- 3. You wish something should be done. 2
- 4. You do not agree. 3**
- 5. You do not agree at all. 1

Situation Three:

It is the recess time of your school. You are down stairs near the canteen with your classmates. You go near the canteen to buy a packet of chips. You find that Mr. Trivedi the canteen in-charge is too busy and goes wild while meeting the demands of the customers near the canteen window. The children who have rushed to the window are shouting to get the eatables for sale. The big boys are pushing the younger children and girls, overpowering them and procuring the packets of breakfast. You and your friends manage to get it because you are tall.

A) Do you think that crowd near the canteen is a problem?

- 1. Yes always. 3**
- 2. Yes sometimes. 2
- 3. Yes rarely. 1
- 4. No it is not, in fact it is great fun to push each other and grab the breakfast. 0
- 5. I can't decide. 0

B) What do you think should be done?

- 1. Chaos at the canteen in recess time is a problem and it should be tackled by the Principal. 1
- 2. Canteen-in-charge should ask the security to stand with the stick and beat the students who break the line. 0
- 3. A committee of teacher and students should be formed to tackle this problem. 2

4. The committee should discuss this problem in each class and suggestions should be asked from each class. 3

5. Any other idea you may think, please write here.

C) Suggest some arrangement so that each customer gets breakfast without pushing or pulling.

1. The venue for boys and girls should be different. 1

2. The venue for primary and secondary students should be different. 2

3. The students should never break line to buy the breakfast and remain in discipline. 0

4. The dividers for making different lines should be kept. 3

5. Please write any other idea you think.

D) Write what you thought before suggesting new arrangement?

1. How many students of each section buy breakfast from canteen generally? 3

2. What is the menu? 0

3. How many girls visit the canteen? 1

4. How many primary class students buy breakfast? 2

5. Please write anything else you may think.

E) What will you suggest for lower primary class children and girl customers?

1. Canteen for girls and primary class students should be away from boy's canteen. 2

2. This kind of problem of similar type of school should be studied. 1

3. The solution to this problem can be obtained from the internet. 0

4. Class representatives and Head girl and Head boy can together bring solution to this problem. 3

5. Please mention any other solution you may think.

Situation Four:

There are some very weak students in your class. These students never do the home assignment. Teacher calls you for the meeting to address this problem along with class representatives. She needs your co-operation.

Answer the questions asked by the teacher by choosing any one option you think is right.

A) Do you think that this is a problem?

1. Yes definitely it is a problem. 3

2. Yes sometimes I think that it is a problem. 2
3. No it isn't, in fact it is great fun to compete with weak students. 1
4. I can't decide. 0

B) Suppose this is a serious problem then will you help the teacher to solve this problem?

1. It depends on my mood. 0
2. I will see for whom the teacher is asking help. 1
3. I may help. 2
- 4. I will try to help her out. 3**
5. Please mention any other response you may think.

C) What will be your decision if teacher makes a personal request to you?

1. I shall help her by giving suggestions. 2
- 2. I shall participate in the meeting and do whatever I can. 3**
3. I shall attend the meeting but will not help anyone to do homework. 1
4. I shall neither attend the meeting nor will I suggest anything. 0
5. Please mention any other decision you may take.

C) Why will you take such decision?

1. I will help the teacher as I like her. 2
- 2. I will help the teacher as I am happy she requested me. 3**
3. I will attend the meeting but will not help anyone as I do not think I can. 1
4. I will neither attend the meeting nor will I suggest anything as nobody should finish the work before me. Teacher should praise only me. 0
5. Please mention any other reason for taking the decision.

E) What can be done to motivate these weak students to do homework?

1. They should be punished for not doing homework. 0
2. They should be rewarded if they do a little work. 1
3. They should be helped in solving the questions that they can't do. 2
- 4. They should be helped in understanding the concepts that they haven't understood and motivated to attempt the homework by themselves. 3**
5. Please mention if you have any other solution.

F) What will you think of while suggesting new seating arrangement for the weak and disinterested students? (Assuming that the student is disinterested as he/she is weak)

- 1. The weak students should be made to sit with the students who are above average. 3**

2. The weak students should be made to sit together in one row so that teacher can concentrate on them. 2
3. The weak students should be made to sit with the rankers so that they may get help. 1
4. All the weak students should be made to sit in first row only so that they do not disturb the good ones. 0
5. Please mention here any other suggestion you have.

Situation Five:

In your class there are few smart boys and girls. Your class teacher has all praises for them. She hardly gives you an opportunity to participate in the Inter School competitions or shoulder some responsibility. Your teacher very often calls them and assigns one or the other duty. You too want to shoulder some responsibility. You raised your hand every time to participate but the teacher ignores.

Choose the correct alternative to answer the given questions.

A) Do you think that this is a problem?

- 1. Yes always. 3**
2. Yes sometimes. 2
3. Yes rarely. 1
4. No it is not. 0
5. Please mention anything else you may think.

B) How will you define this problem?

1. Teacher's unjust behavior. 1
2. Pure bad luck. 0
3. Lack of interest of teacher in you. 2
- 4. Lack of knowledge of your talents on the part of your teacher. 3**
5. Please mention if any other way you wish to define this problem.

C) What will you do in such case?

- 1) You will ask your parents to talk to the teacher and force her/ him to include you in every competition. 1
- 2) You yourself will complain about this to the principal directly. 2
- 3) Your parents know the trustee of the school, so you will ask your mother to talk to the trustee. 0
- 4) You will meet the teacher personally and share your ideas or tell the teacher about your competencies. 3**

5) State any other action if you think you can do.

D) What will be the correct way to draw your class teacher's attention to put you in the assembly committee or discipline committee?

1) You will shout loudly to answer every question asked by the teacher. 1

2) You will produce the sound of very popular cartoon character so that everyone including teacher laughs and looks at you. 0

3) You will stand up and tell the teacher to include you in the committee. 2

4) You will behave in the disciplined manner and request the teacher to include you in the committee and explain your course of action as the committee member. 3

5) Write if any other action you will do.

E) What will the most correct solution of this problem?

1) Wish good morning to the teacher every day and every time you meet. 2

2) You will meet the teacher and tell about the skills you have. 3

3) You will stop taking interest in school activities as you feel that teacher is biased. 0

4) You will give gifts and cards to the teacher on every occasion. 1

5) Mention if any other suggestion you have.

Appendix_3.11

Post Test One

Post Test: To study existing status of critical thinking skill

Situation One:

Once upon a time there lived a king in Patan. He had two sons. The elder one was Shekhar and the younger one was named as Raj. The King wished to appoint one of his sons as the ruler. The king decided to call his citizens in the court and ask them to vote for right one of them as the future caretaker. The wisest and oldest man of his kingdom was asked to give some tough questions to them to test their mental ability. On the basis of physical and mental test the king thought of selecting the appropriate prince. The royal court was spilling with all the ministers and citizens. Everyone was eager to choose their future caretaker. The wisest man saw the courier man. The wisest man posed two questions to the royal youth. Q. 1) if the royal personal courier man starts one day from Patan visits Delhi which is 500 km away and returns to Patan after four days. How much displacement of the royal courier man took place?

At this question, Prince Shekhar answered immediately, “Zero” while Prince Raj said, “1000 km”.

The wise man asked further, Q. 2) I saw the royal courier man today and four days earlier too in the royal office. Now he is asking for travel allowance. Should the office pay him for?

Prince Shekhar answered, “no and yes.” Prince Raj said, “Yes of course!”

The wisest man of the court declared Prince Shekhar as the winner.

Choose the most appropriate alternative to answer the given questions. Tick your choice of answer.

- (A) What is the story about?
- a. Choosing the prince for princess’s marriage. 1
 - b. Decide who is more powerful? 3
 - c. Select the method to decide the wedge. 2
 - d. **Choose the appropriate ruler for the kingdom. 4**
 - e. Anyone else you think.

(B) Who is involved in the process of selection?

- a. Ministers only
- b. Intelligent people of Patan
- c. Ordinary citizens and ministers

- d. Ministers, intelligent people and ordinary citizens
- e. Write who you think are involved

(C) The above story is divided into various incidents. Which is the most correct sequence of incidents?

- a) The wisest man who is oldest is invited.
- b) The court spills with people.
- c) The people were asked to vote by the king.
- d) Prince Shekhar says, “no and yes.”
- e) The wisest man saw the courier man.

Choose the correct sequence of events.

- 1. a), d), c), b), e) 2
- 2. a), c), b), e), d) 4**
- 3. d), b), a), e), c) 1
- 4. a), e), c), b), d) 3
- 5. Any other sequence

(D) What is the assumption in this story?

- a. One of the princes is unfit to rule. 4**
- b. The prince Raj is unfit to rule. 3
- c. Both the royal children are unfit to rule. 1
- d. The wisest man can alone rule. 2
- e. Anyone else you think.

(E) Whom will you choose as the Ruler? Why?

- a. The prince Shekhar as he is strong and aggressive and the most importantly he is elder. 1
- b. The prince Raj because he is intelligent and handsome. 2
- c. The prince Raj as he is strong has vigour to fight and he is trained. 3
- d. The prince Shekhar because he is truly educated, he understands difference between distance and displacement yet he is practical. 4**
- e. Anyone else you think

Situation Two:

Rina and Rita are good friends. Both have kids of 5-6 years of age. Rita and Rina's friendship is widely known for 25 long years. One day Rita visits Rina's home in the

afternoon. Both are enjoying a cup of tea with homemade samosa while watching their kids play in the lawns. Rina tells Rita with pride about how she takes good care of her son. She gives him 500 ml milk every day. Thus she sees that he gets enough nutrition. Rita asks her how she helps him to get enough calcium. Rina answers by saying that she gives milk to get calcium. Rita asks her again about the supply of calcium. She enquires about actual intake of calcium. She asks specifically whether Rina's kid really gets calcium. Rina gets confused and insists that her son gets calcium as she gives milk twice a day to her growing kid. Then Rita explains that milk alone is not enough. She should add Bournvita to milk to get vitamin D which helps our body in absorbing calcium. (Dramatization of this story is watched everyday on television in the form of advertisement of **Bournvita**.)

Choose the correct alternative to answer the following questions.

Q. A. What is the assumption in this story?

- a. Rita is more intelligent than Rina. 3
- b. Rina and Rita are best friends. 2
- c. Plain milk does not supply calcium. 4**
- d. Bournvita is necessary to get calcium. 1

Q. B. The above story is about.....

- a. Rita and Rina's friendship. 1
- b. Health of their children. 3
- c. Effect of milk on human health. 4**
- d. Effect of Bournvita on child's health. 2

Q. C. Read the following statements and choose the correct order of events.

- 1. Rita asks Rina to put Bournvita in milk.
- 2. Rita visits Rina's home.
- 3. Rita asks whether Rina's child gets calcium.
- 4. Rina says with pride, "I give milk to him twice a day."

Actual order of events is -----

- a. 1,2,3,4 1
- b. 2,4,3,1 2
- c. 2,3,4,1 4**

- d. 2,4,1,3 3
- e. Any order you feel is correct.

Q. D. “Bournvita supplies vitamin D” this statement can be accepted as truth because...

- a. Television commercial says so. 2
- b. Rina an intelligent and beautiful lady says so. 1
- c. Food and Drugs laboratory report of the sample of Bournvita with milk says so. 4**
- d. The multinational company Hindustan Lever says so. 3
- e. Write what you think is truth.

Q. E. The head of Nutrition department of All India Institute of Medical Sciences, Dr. Jain

says that, the Bournvita is made from the waste obtained after extracting oil from the

Ground nut seeds which is coated with sugar and flavoured with chocolate. The cost

of powder of ground nut waste is Rs. 20-25 per kg. While Bournvita costs Rs. 250

per kg. “Drinking plain milk will give calcium. It is more healthy and economical.”

Do you agree with the last statement?

- a. Yes 4**
- b. No 1
- c. Can't decide as I love Bournvita. 2**
- d. I will always agree. 3

Situation Three:

It is the month of March. The winter is receding fast. Summer season has set in. Your school works from 7 a.m. to 12 a.m. While going home you feel very hot. The ice ball

maker in the way sells ice ball for 10 Rs. each. You always have at least twenty rupees in

your pocket. The ice balls are very tempting as they are sour, sweet, flavoured and

colourful. He claims that the ice balls are made from mineral water and the colours used

are food colours. The hawker stands just behind your school where there is a vegetable

market, the temple, the fish market and a public urinal.

Q.A. You can spend 10 Rs. on ice ball every day. It has.....risk.

- a. Zero risk 2
- b. Calculated risk 3
- c. Health risk 4**
- d. No risk at all 1
- e. Mention what you think

Q. B. The ice ball is germ free because.....

- a. The hawker uses mineral water and food colours. 4**
- b. The hawker says that his ice balls are the healthiest. 1
- c. The hawker gets a certificate from government to sell ice balls. 3
- d. Parents of children eat ice balls sold by this hawker, they don't fall ill. 2
- e. Please mention any other reason you feel.

Q. C. The ice ball cannot be germ free because.....

- a. The hawker's ice cart is near the public urinal and market area. 3
- b. The ice factory is very far away from the market place and quality of ice is doubtful. 2
- c. The hawker does not use gloves for making ice balls. 1
- d. All the above reasons. 4**
- e. Mention any other reason you think.

Q. D. By eating the colourful ice ball you will not fall sick because.....

- a. **I have high immunity. 4**
- b. If I fall sick it is due to some one's bad wish not due to few germs. 1
- c. My other classmates also eat and nothing happens to them. 3
- d. Ice balls sold by hawker are germ free. 2
- e. Mention any other reason you think.

Q. E. The schools should sell such items and soft drinks in the school itself. Do you agree?

- a. Yes, I do 3
- b. Not needed. 2
- c. No, Never. 1
- d. **Yes, I always agree. 4**
- e. Mention your opinion other than above.

Situation Four:

You are in the Central mall. You love the place because it sells toys, video game console like 'Play Station', clothes, fast food, kitchen ware, cosmetics, books, computers, stationary, sweets, furniture, grocery, foot ware and music CDs etc. It also has a multiplex theatre. Your father gave Rs. 5000 to you. Your mother asks you to do the shopping for the new academic year in this budget. Your stationary expense every year is Rs. 3000. She says that you have to meet the expenses of the coming academic year in this budget.

Choose the correct answer for the given questions.

Q. A. What should be your priority in purchase?

- a. 'Play Station' a video game console, cosmetics, books. 1
- b. **Books, notebooks, uniform, socks, shoes. 4**
- c. Books and Play station with video games. 2
- d. Books, fast food, shoes, uniform. 3

e. Any other combination.

Q. B. How will you go about spending Rs. 5000?

- a. Sit and discuss with friends then make list. 1
- b. Sit and discuss with your parents then make a list 3
- c. Search on internet and find the cost of things needed then make list. 2
- d. **All the above.** 4
- e. Anything else you wish to mention.

Q. C. Which alternate plan will be the most appropriate?

- a. **Enquire for the price of 'Play Station' in different shops; choose the model that fits in the budget and buy the annual school requirements from whole sale market. 4**
- b. Look for sale schemes in the mall itself. 2
- c. Put a demand for rise in the annual budget to your parents. 1
- d. Try to earn money in vacation and search other sponsorer for your favourite game. 3
- e. Any other plan you think.

Q. D. 'Buying things from mall is economical' Is this statement true?

- a. Yes, definitely. 1
- b. I do not know. 2
- c. May be true. 3
- d. **Search in the market is needed to decide this. 4**
- e. Anything else you wish to mention.

Q. E. 'Buying things from mall is expensive.' Is this statement true?

- a. Yes, definitely. 1
- b. I do not know. 2
- c. May be true. 3
- d. **Search in the market is needed to decide this. 4**
- e. Write anything else you want to mention.

Situation Five:

A] Which of the following are Dos and Don'ts at the time of Fire in the school chemistry laboratory? There are chemicals on the shelf that can catch fire when they are in contact with water. Some of your classmates have burnt their skin a little. Classify the following statements under Dos and Don'ts in the case of emergency.

1. Pouring sand instead of water on fire will extinguish it.
2. Switching on fans will blow the air, reduce the temperature and stop the fire.
3. Covering fire with blanket is the best.
4. Beat the fire flames with rough cloth.
5. Open the seal and use fire extinguisher spray.
6. Shout for help and gather people.
7. Apply Burnol to the wounds of affected students.
8. Call fire brigade station and give them details of fire quickly on phone.

Dos

Don'ts

1

2, 6

3

4, 5, 7, 8

Situation Five:

B] Classify the following events into healthy and more healthy and economical habits.

1. Boris Baker the tennis player eats banana in every break. (More healthy)
2. Sachin Tendulkar drinks Boost for energy in every break. (Healthy)
3. Sarang drinks fresh lemon juice after coming home from hot sun. (More healthy & Economical)
4. Yash drinks Rasana pineapple flavour after coming home from hot sun. (Healthy)
5. Priya prefers big American garlic in place of small garlic grown in rural India. (Healthy)
6. Anjana prefers home grown coriander in place of coriander powder sold by Vijay Masala Company. (More Healthy & Economical)

7. Raj takes sprouted pulses with fresh buttermilk in breakfast. (More Healthy & Economical)
8. Arab eats Kellogg cornflakes with little milk for breakfast. (Healthy)
9. Alisha takes fresh tomato soup as an appetizer before dinner. (More Healthy & Economical)
10. Ahmed takes Maggie soup as an appetizer before dinner. (Healthy)

There are five healthy and five more healthy and economical habits. Each statement classified correctly will carry 1 mark. Critical judgment of right or wrong is asked, so evaluation will be done with 0 and 1 point.

Appendix_3.12

Post Test Two

Post Test: to study existing status of creative thinking skill

Situation One

Your teacher has drawn certain shapes on the blackboard. You are supposed to draw these shapes and make a meaningful picture.

The shapes drawn on the blackboard are a club, spade, heart, diamond, circle, hexagon, cylinder and a cone with fixed dimensions. The size of shapes drawn should be in same proportion as drawn on blackboard.

Situation Two

Compose and write a story in two hundred words using the following phrases.

Shilpa a girl studying in class IX, eats green algae, full-moon day, bright night, breeze of air, two honey bees talking with each other, nano food, strong honeycomb, some vital change, energy, reproduction, queen bee, scientific research, apiculture, man's food requirement and role of honey bee in sustainable development.

Situation Three

Rearrange the living beings in a pyramid. Mention the criteria you decide.

Lion family, hawks and vultures , lush green grassland, grasshopper, walnut trees, hunter family, butterflies, honey bees, sparrows, ants, fish and frog in pond, deer family, hyena and jackal, rabbits and rats.

Situation Four

Draw a pencil sketch to show the green house effect on the earth.

Situation Five

Suggest a diet for the sports champion who does lot of physical exercise everyday like jogging, cycling, swimming and playing tennis tournaments. Write high protein diet for the sports champion (a girl or a boy of your age) in which butter, cheese and ghee are **not**

to be used. Answer the following questions by selecting correct choice or by writing the answer in the space provided.

A) Do you get bored by doing same kind of work?

1. Yes, some times.
2. Yes, quite often.
3. No, never.
4. No, not always.
5. I have something else to say. (Please mention)

B) Do you get new ideas for doing same old things?

1. Yes, I do.
2. No, I don't.
3. I always have a new idea.
4. I am bored to think new.
5. Please mention if you have something else to say.

C) Narrate any one situation when you did a thing differently.

The situation need not be only in the school it might have happened anywhere else.

D) Do you feel bored in trying out new things?

1. Yes, I am scared.
2. Yes, I get bored.
3. No, not always.
4. No, I am neither scared nor bored.
5. Please mention any other thing if you have to say.

E) (i) Have you generated new ways for doing any project assigned by your teacher?

Give

Example.

E) (ii) Teacher has asked you to dramatise the incidence of Newton and the apple tree. You can add any two other characters of your choice into the story. Write at least ten dialogues to narrate the story of falling apple.

Appendix_3.14

POST TEST 3

TO STUDY EXISTING STATUS OF DECISION MAKING SKILL

Situation One

Your school is a coeducation school. Girls and boys sit together, study together and play together. One day as recess gets over you run from the corridor near your class and settle in your seat. You prepare yourself for the science class and look forward to see your science teacher Mrs. Joshi. Suddenly you notice that the girl classmate sitting next to you is weeping holding her stomach. She is neither telling anything and nor getting up from her seat. She starts yelling after sometime asking you to give a telephonic call to her mother from the school office. When she tells to her friend that she is bleeding you hear it. Some boys in the class start whispering while few girls cover her and escort her to washroom. You are absolutely unaware of such health problems.

A) What will you do in such situation?

- 1) I shall join the group of boys who are giggling and whispering to know more. 1
- 2) I shall go to the school office to call her parents 2
- 3) I shall ask her female friend to call her parents. 3
- 4) I don't know what to do so I keep quiet. 0
- 5) I shall inform the teacher who arrives in the class and request her/him to do the needful. 4**

B) You over hear the giggling boys uttering words like “periods, girls problem, menstruation” you are curious to know about it, what should you decide to do?

- 1) Ask those big boys. 1
- 2) Ask your female friends. 2
- 3) Refer encyclopedia in the library and try to read more about this problem. 3
- 4) Ask your biology teacher about it. 4**
- 5) If you think of some other response then please mention.

C) Should you ignore the problem occurred in the classroom?

- 1) Yes, I should ignore, as it wastes my study time. 2
- 2) No I should try to know about girl's problem 3
- 3) Yes, it can be ignored as some girls are too delicate. 1

- 4) **No it can't be ignored; cause of such problem should be known. 4**
 - 5) Any other idea you think, please mention.
- D) Do you think of any alternative decision before taking any decision?
- 1) Yes often I think before action. 3
 - 2) Sometimes I do. 2
 - 3) **I always think of consequences of alternative decisions before deciding anything. 4**
 - 4) No, I am always confused. 1
 - 5) Why to think so much? Who has time to think? 0
- E) Will you ask your mother about the problem faced by your classmate?
- 1) Yes, because asking teacher is out of fashion in the class. 3
 - 2) Yes, because she might know about such problem. 2
 - 3) No, school things are not discussed at home. 0
 - 4) Yes I may, not sure. 1
 - 5) **Yes, as it might be of help to me. 4**

Situation Two

It is the festival time in your town. During festival people dress well, clean and decorate their homes. Clean them and treat themselves with beauty treatments. Make and have festival feast. Meet community people and enjoy free time with them. Your father asks you to white wash the wall of your compound with lime water. Your mother prepares a home-made face pack to improve everyone's skin tone. She asks everyone in the family to apply it on face and arms. She gets busy in making dishes for festival and asks your help in cooking. There is only one bathroom for the family of five. As mother asks everyone to hurry for bath after body massage, there is a rush at the bathroom.

- A) Who should go for bath first?
- 1) Father, because he is the boss at home. 0
 - 2) Grandma, because she is the oldest of all. 2
 - 3) I should be allowed because I have to plan evening function with my friends. 1
 - 4) Mother, because she cooks food for all. 3
 - 5) **Each one in the family should take bath within the span of one hour after the body massage with homemade colloidal face pack to get its best result. 4**
- B) What will you do before white washing the wall??

- 1) **I shall clean off the dust or dirt on the wall before whitewash.** 4
 - 2) I shall ask father to prepare the paint and give me. 3
 - 3) I shall ask mother to clean the wall and ask father to whitewash it. 2
 - 4) I don't have time for this. 1
 - 5) Why me? There are better things to do than this. 0
- C) How will you prepare the mixture?
- 1) By mixing water salt, hydrated lime and water. 1
 - 2) **I shall take a bucket full of water (9-12 liter), add 1 kg common salt to it so that its temperature will reduce then add 2 kg masonry lime to it and stir it with a wooden rod. Before adding lime stone I should wear eye glasses, tie a mask over face and wear rubber gloves. Then allow the mixture to get mixed well. Meanwhile I will clean the wall.** 5
 - 3) I shall ask my father to prepare it and give me. 2
 - 4) I shall watch father doing it then I will do it. 3
 - 5) I shall first watch it on 'You Tube' then do it. 4
- D) Why do you think has your mother decided to make face pack at home? She makes face pack of turmeric powder, milk cream, rose water and roughly powdered roasted gram (chana) seeds.
- 1) She loves her family. 1
 - 2) Mother takes decisions based on the knowledge gained from her mother. 2
 - 3) She knows chemistry behind colloids well. 3
 - 4) **She knows how to make it at home so that use of pure components adds to its quality. Suspended particles of gram (Chana) clean the skin well and cream keeps it soft. Turmeric kills the germs. Above all it is economical.** 5
 - 5) Write any other answer with your reason.
- E) What do you generally decide to do once your parents ask you to do some work?
- 1) They are parents so I do whatever they say. 2
 - 2) **If they involve me in decision making process before giving work, I am happy.**

- 3) Generally I do whatever they say till it doesn't disturb my play time. 3
- 4) I hate their decisions imposed on me and I avoid work assigned by them. 1
- 5) Write any other reaction you may exhibit to their decision.

Situation Three

Your school has a science club. Your science teacher and all the members of science club decide to grow vegetables in your school terrace garden. "This is going to reduce air pollution and we are going to get fresh vegetables for our school kitchen" says Mrs. Seema the principal of your school. She asks you to arrange the duties of students of your class for working in the garden. Your science teacher and principal frequently hold meetings with students of science club and decide a plan of action.

A) What will be your first response to yourself?

- 1) Oh! How can I do it? I can't do it. I will not. 1
- 2) Let me try. 3
- 3) Oh! I have to select students from my class! 2
- 4) **Ah! I can do it! Let me think! 4**
- 5) Any other response you have then write here.

B) How will you go about doing this work if you decide to do it?

- 1) Randomly choose classmates to work in garden. 3
- 2) **First I will ask my classmates about their interest in gardening then assign duties according to their interest. 4**
- 3) Choose students with odd roll number. 1
- 4) Choose students with good physique. 2
- 5) I don't know. I am confused. 0

C) What will you decide to do?

- 1) Refuse and ask the principal to pardon you as you don't want to do it. 1
- 2) **I shall do the work of assigning the duties. 4**
- 3) My friends won't like if I do this work. 2
- 4) I shall give few names to principal madam; she will do the work of assigning duties. 3

5) Mention any other decision you will make.

D) How do you think plants can be grown on terrace?

- 1) Buy earthen pots, soil, seeds and grow plants. 1
- 2) Broad trays can be made from used boxes of cardboard / plastic / wood. Soil can be added to it. 3
- 3) **Since earthen pots and soil will increase load on terrace floor light weight plastic trays should be used to fill soil. 4**
- 4) Earthen trays are best as they won't get damaged by sunrays.
- 5) Any other action you think please mention here.

E) What criteria will you use to choose your classmates to work in terrace farm?

- 1) They should be interested. 1
- 2) They should be strong enough to pick pots, dig soil. 2
- 3) **They should be interested, strong, should be ready to learn farming skill. 4**
- 4) Pair of strong and weak but smart student should be made to work together.
- 5) Some other criteria you think, please mention.

Situation Four

Your social science teacher asked you to conduct a project in the vicinity of your residential area. She asked you to interview ten pairs of grandpa and grandma to know their life style and food habits. You were supposed to know their ways of financial management and home management. You find that grandparents consume very less processed food, they prefer fresh home cooked food to readymade food. You find that they have maintained their health with balanced food diet. Their life style is very simple with minimum wants. There are no unnecessary worries.

A) What will you do before starting the project?

1. I will think about it. 2
2. I will discuss with my teacher and get the plan of action from her. 3
3. **I will discuss with teacher then decide a plan of action. 4**
4. I will check what other students are doing then will start the project. 1
5. Write any other suggestion you have.

B) If you are asked to do this project in team and you are a team leader will you chalk out

the plan of action by yourself? Will you allow your team mates to suggest ideas?

1. Yes, as I am leader, it is my responsibility. 2
2. No, too many cooks spoil the broth. 1
3. Yes, I will do it. 3
- 4. Yes, I shall; but before finalizing I shall discuss it, with team members to incorporate valuable suggestions if they have. 4**
5. Write any other action you think than mentioned above.

C) Will you decide to be hard task master and give orders to teammates?

1. Yes, if I am the leader; others should obey your orders and get the work done. 2
2. Yes if one wants to complete the task within the time limit given by the teacher. 1
3. Yes if I wish to complete the task before every other team.
- 4. Yes I will be hard task master. My team wishes to complete the task in the time limit and with good grade. 4**
5. Write any other reason you have.

D) What will be the consequences of your actions?

1. I shall be able to successfully complete the task. 3
- 2. I shall be able to present our team's work in time and get good grade. 4**
3. I may be able to fetch good grade for our team's work. 1
4. I shall prove to be a popular leader. 2
5. Write any other consequence than mentioned above you think.

E) Choose any one sequence you think is appropriate.

f) Discuss the project with teammates; assign duties according to their choice and abilities.

c) Send some of them to neighbourhood to identify families with both grandparents for interview.

d) Some should start writing a questionnaire to collect data during interview.

e) After getting data from one pair of grandparents, data should be handed to the teammate who

will tabulate it.

b) One who is good in drawing and hand writing should start making the project file.

g) One of the teammates should start decorating the file papers.

a) The leader should co-ordinate the work and assist the needy.

1. c), b), a), d), g), f), e) 2

2. a), b), c), d), e), f), g) 1

3. b), c), d), e) f), g), a) 2

4. f) c) d) e) a) b) g) 4

5. Write any other sequence if you have thought.

Situation Five

Does Gravity act equal on all? Your Teacher has given you an activity to check whether gravity acts equal on small stone, big stone, paper ball and feather? You are supposed to calculate value of g for each object when the objects are allowed to fall from terrace of a two storied building.. You are also supposed to calculate acceleration of falling object by calculating rate of change of velocity per unit time. You can use stopwatch to measure time of falling object from terrace to second floor to first floor to ground. You can use measure tape to measure distance between each floor and terrace and ground.

A) Will you need to gather any information before starting the program? Why?

1. Yes, information related to mass of each object is needed. 2

2. Yes, information related to their mass and material is also needed 1

3. Yes, information related to their mass, volume, kind of material should be gathered which will help to know the difference between effect of gravity on each if any. 4

4. No, information is needed before conducting the experiment. Value of ' g ' is free of mass of objects. 3

5. Anything else is thought by you, should be mentioned here.

B) What will you think of before starting the project planned by you?

1. **Time and resources available. 4**

2. Time and technology available. 2

3. Time and man power available. 3

4. Time and money available. 1

5. Anything else you think mention here.

C) Will you think of only one plan of action?

1. Yes, well discussed one plan is enough. 1

2. **Decision should be taken for one detailed plan keeping alternative plan ready. 4**

3. More than two plans should be ready. 3

4. No, more than one plan is not needed if you have one detailed plan. 2

5. Anything else you wish to mention, please mention here.

D) What will be the most appealing plan of action?

1. Most appealing plan of action will be the one that will help in completing the project in given time. 2

2. **Most appealing plan of action will be the one that will help to complete the project in given time, addressing all the aspects of the problem, accomplishing the specific objectives of the project in time. 3**

3. Most appealing plan of action will be the one that will fetch good grade. 1

4. Most appealing plan of action will be the one that will make very beautiful project file. 0

5. Anything else you wish to mention please mention here.

E) Which of the following plan of action will be the best? Why?

1. Measure height of the building. Measure time of falling of each object. Measure distance between each floor. Measure time with stop watch each time the falling object crosses the floor. Calculate acceleration by dividing difference in velocities by time interval. Check whether value of 'a' matches with 'g'. 3

2. Value of g is available so no need to calculate acceleration. 1

3. **Value of g is same for each falling object observed at the same place. But time of falling of each object should be calculated. Density of each object is different. Air resistance for each object is different so it is felt that gravity**

acts differently on heavy and light object. If each object is allowed to fall in airless (in vacuum) room all kinds of objects will fall at the same time. 4

4. Theoretically value of g is same at a particular place for all objects so only time of fall of each object should be calculated. Volume of each object should be calculated. 2
5. Mention any other plan of action you think.

Appendix_3.14

Post Test Four

Situation One:

Your mother needs coriander (dhaniya) and curry (kadhipatta) leaves everyday while making food. You too enjoy the flavour of both leaves. In the months of summer the coriander leaves are very costly. Curry leaves are not available in the market at times.

A) Do you think that this is a problem?

1) **Yes I think so. 4**

2) No, I don't think so. 3

3) It is my mother's problem. 2

4) It is whole family's problem. 1

5) Why should I bother? 0

B) If it is a problem then should you try to address this?

1) It is not needed. 0

2) It bores me. 1

3) It may be tried. 2

4) **Yes I should try to address it. 4**

5) My mother is competent enough to address this problem. 3

C) This problem can be addressed by.....

1) Purchasing coriander and curry leaves from wholesale market. 2

2) Drying the leaves in winter and using them when needed in summer. 3

3) **Grow the plants of coriander seeds and curry leaves at home. 4**

4) No need to look into the matter of solving this problem. 1

5) Stop eating coriander and curry leaves. 0

D) This problem cannot be addressed by me as.....

1) **I am small but I can suggest something. 4**

2) Nobody listens to me. 3

3) Why to bother myself? 2

4) What if coriander and curry leaves are not used? 1

5) These leaves look like garbage in the baked dish. 0

E) Kitchen garden is the best solution for this problem.

1) No, I don't think so. 0

- 2) I appreciate farmer's work, so buy from the market. 1
- 3) It is a very tedious process to grow plants. 2
- 4) Trying to grow plants in the kitchen garden is no harm. 3
- 5) Plants grown in kitchen garden will give good flavour so these plants must be grown. 4**

Situation Two:

Your school campus is near a veterinary hospital that has three animal sheds. One of them is a cow shed. The breeze of wind flowing from south crosses that cowshed and enters the classroom that lies in southern direction of your school which happens to be your class.

A) Do you think that this is a problem?

- 1) No, it is not. 1
- 2) Gods reside in the cow so odour of cow dung is pious, it can't be a problem. 0
- 3) Yes, it is a problem. 4**
- 4) If you say so then it is a problem. 2
- 5) Bad odour of cow dung is a problem. 3

B) Should this issue be looked as never to be solved kind of problem?

- 1) Cows are not a problem so cow shed is also not a problem. 4**
- 2) How can we as students think about this? 1
- 3) One should learn to tolerate the odour. 0
- 4) This problem can never be solved by the school. 2
- 5) Something can be thought of to address this problem. 3

C) What can be the probable solution to this problem?

1) Go to the municipal corporation office directly to request them to shift the veterinary

hospital from that place. 1

- 2) Burn incense sticks every day in the classroom to get good smell. 2
- 3) Throw tantrums and scare the principal about infections coming your way. 0
- 4) Keep windows towards south closed. 3

5) Discuss this issue with your class teacher and then with the principal. 4

D) If your principal asks you to go with your teacher and meet the hospital in-charge to

discuss the matter what should you tell him?

1) He should not allow cows as patients to the hospital. 0

2) The cow shed stinks very badly so cows should be treated and immediately sent with

the owner. 3

3) **Liquid soaps, phenyl and detol should be used to clean the cow shed. 4**

4) The veterinary hospital should be shifted somewhere else. 2

5) Police should be called to take away the cows if the owner of the cow does not take away the patient immediately. 1

E) What is the scientific solution for the odour from the cow sheds?

1) The Veterinary hospital authorities can be asked to plant more trees in their campus so

that the breeze containing bad odour gets filtered. 2

2) The school should change its venue. 0

3) Some cloth can be invented that will absorb the odour when curtains made of such cloth

are used. 3

4) The southern windows can be kept closed. 1

5) **More trees should be planted in the hospital campus. The direction of wind, the**

timings of the dung odour, the amount of bad odour can be observed then third

solution of using odour absorber cloth for curtains should be applied. 4

Situation Three:

You are the student as well as class representative of your class. Recently you have been chosen as the head of the students union. The kitchen in your school generates at least 10 kg of biodegradable waste every day. Principal was discussing about this in the assembly and had asked to give suggestions.

A) Do you think that this is a problem?

1) Oh! I do not think so. 2

2) School kitchen is very popular, what if it generates bio waste? 1

3) Too much is expected from me if you are asking me to manage that waste. 0

4) **It is a problem. 4**

5) It is not my problem. 3

B) How do you think that this phenomenon is a problem?

1) As principal has discussed it we shall have to consider this as a problem. 3

2) Kitchen waste can be fed to the animals like cows who roam on the roads. 2

3) School kitchen will produce bio waste. It is obvious. Why to bother about it? 1

4) **It is a everyday problem as Monday to Saturday the school kitchen cooks food. 4**

5) I don't know. I am confused. 0

C) What will you do to address this problem?

1) Refuse and ask the principal to pardon you. 2

2) I as a student's head will call a meeting of all class representatives and discuss this issue. 3

3) Principal and teachers should think about it and stop bothering us. 1

4) **Biodegradable waste can be tackled in a scientific way of bio gas plant. 4**

5) School kitchen head should be asked to stop creating waste. 0

D) Why will you decide the above mentioned solution to the given problem?

1) Managing kitchen waste is not student's problem. 1

2) I am head of students so any problem in school should be discussed with other leaders and solved. 3

3) Decision of the Principal and teachers will be final for us. 2

4) **Bio gas plant is the solution to biodegradable waste that in turn will give bio gas a source of energy. 4**

5) The easiest way to get rid of this problem is stop the source of kitchen waste. 0

E) What criteria will you use to get the solution to above said problem?

1) The solution should be feasible (possible). 1

2) Unity is the strength, all together can solve the problem. 2

3) **Thinking scientifically and collectively will help to get the solution. 4**

4) The solution should be easy to apply. 3

5) All problems do not have solution. 0

Situation Four:

Your language teacher has taken you to the museum. She announces that each team has to find fifty new words from the museum and write in the project file with dictionary meaning of each. Each team consists of ten students. Each team starts going to different sections of museum. Museum is a public place. Here students of other school come. The boys of that school start teasing girls of your school. Some are very aggressive and start physically hovering closer to some girls of your class.

A) Do you think that this is a problem?

1. No, it is temporary phase. 1
- 2. Yes, it is a problem. 4**
3. It is a serious problem for girls. 2
4. Not a big deal!0
5. The situation should be vouched. 3

B) What kind of problem is this?

1. Social problem. 1
2. Security problem 3
3. Minor problem 0
4. Major problem 2
- 5. The problem that needs immediate attention. 4**

C) Will you chalk out the plan of action by yourself to address this problem?

1. Yes, as I am the LEADER. 0
2. Yes, too many cooks spoil the broth. 1
3. Yes, I will do it. 2
4. Yes, I shall; but before finalizing I shall discuss it, with team members to incorporate valuable suggestions if they have. 3
- 5. No, first teacher should be informed about this issue. 4**

D) What will be the consequences of your actions?

1. I shall be able to successfully address the problem. 2
2. I shall quickly shoe away the other school boys by shouting at them so that girls will be safe. 3
3. I shall be able to control the other school group. 1
4. I shall prove to be a popular leader. 0
- 5. Informing teacher about this issue will give it right direction. 4**

E) Choose any one sequence you think is appropriate.

- a) Discuss the problem with team mates assign duties according to their choice and abilities.
- b) Send some of them to museum for searching new words without wasting time in discussion.
- c) Some of our class boys should be with girls to protect them.
- d) After informing the accompanying teacher new groups of students should be made.
- e) One who is good in physique should protect the girls.
- f) Girls should remain together with the teacher and protect themselves.
- g) The other school teacher should be informed about the misbehavior of other school boys.

1. c), b), a), d), g), f), e) 2

2. a), b), c), d), e), f), g) 0

3. b), c), d), f), g), a), e) 1

4. a), d), g), c), f), e), b) 3

5. Write any other plan of action if you think that orders mentioned above are wrong. 4

Situation Five:

It is the recess time of your school. You are down stairs near the canteen with your classmates. You go near the canteen to buy a packet of chips. You find that Mr. Trivedi the canteen in-charge is too busy and goes wild while meeting the demands of the customers near the canteen window. The children who have rushed to the window are shouting to get the eatables for sale. The big boys are pushing the younger children and girls, overpowering them and procuring the packets of breakfast. You and your friends manage to get it because you are tall.

A) Do you think that crowd near the canteen is a problem?

1. Yes always. 4

2. Yes sometimes. 3

3. Yes rarely. 2

4. No it is not, in fact it is great fun to push each other and grab the breakfast. 1

5. I can't decide. 0

B) What do you think should be done?

1. Chaos at the canteen in recess time is a problem and it should be tackled by the principal. 2
2. Canteen-in-charge should ask the security to stand with the stick and shoe away the students who break the line. 0
3. A committee of teacher and students should be formed to tackle this problem. 3
4. **The committee should discuss this problem in each class and suggestions should be asked from each class. 4**
5. Other school authorities facing similar problem should be consulted. 2

C) Suggest some arrangement so that each customer gets breakfast without pushing or pulling.

1. The venue for boys and girls should be different. 2
2. The venue for primary and secondary students should be different. 3
3. The students should never break line to buy the breakfast and remain in discipline. 1
4. **The dividers for making different lines should be kept. 4**
5. Stop serving food in the school. 0

D) Write what you thought before suggesting new arrangement?

1. **How many students of each section buy breakfast from canteen generally? 4**
2. What is the menu? 1
3. How many girls visit the canteen? 2
4. How many primary class students buy breakfast? 3
5. Only one food item should be sold daily. 0

E) What will you suggest for lower primary class children and girl customers?

1. Canteen for girls and primary class students should be away from boy's canteen. 3
2. This kind of problem of similar type of school should be studied. 2
3. The solution to this problem can be obtained from the internet. 1

- 4. Class representatives and Head girl and Head boy can together bring solution to this problem. 4**
5. Parents of primary class should volunteer to help in recess time. 0

Appendix_3.15

Observation Schedule to Observe LSE Programme

Observation Schedule was designed on the basis of Life Skill Education Programme and availability of classes according to the school timetable of 2012-13. While designing the schedule availability of resources like hall for presentation, computer / lap top, sound system, projector, screen were also considered.

Sr. No.	Date	Time	Periods needed of school time table	Activity under observation and groups
1	28-07-12	11:30 to 12:10	First	Drama- LSEP 1-a) LSEP 1-b)
2		13:30 to 14:35	Fourth	
3	30-07-12	7:30 to 8:05	First	Drama- LSEP 1-a)
4		8:05 to 8:40	Second	Drama - LSEP 1-b)
5	25-08-12	11:30 to 15:30	All periods in Sayaji Garden	Health Survey – LSEP 2-a) LSEP 2-b)
6	4-08-12	11:30 to 12:10	First	Make your Toy - LSEP 3-a) LSEP 3-b)
	6-8-12	12:10 to 12:45	Second	
7	17-8-12	8:45 to 9:20	Third	Colloids around you- LSEP-4 Seminar - PPT
	23-8-12	9:20 to 9:55	Fourth	
8	30-8-12	8:45 to 9:20	Third	3D Model of a Cell/ PPT, LSEP-5 Plant Cell, Groups 1,2,3,4
	30-8-12	9:20 to 9:55 10:10 to 10:45	Fourth Fifth	Model of a Animal Cell/ PPT, LSEP-5 Groups 5,6,7,8,9
9	28-9-12	7:40 to 8:10 8:10 to 8:45	First, Second	Gravity Investigation LSEP-6 Groups 1,2,3,4,5
	29-8-12	10:10 to 10:45 10:45 to	Fifth, Sixth	Groups 6,7,8,9 PPT presentation of experiment performed by students

		11:20		
Sr. No.	Date	Time	Periods needed of school time table	Activity under observation and groups
10	15-9-12 17-9-12 22-9-12	11:20 to 11:55 11:55 to 12:30 11:30 to 12:20	Seventh Eighth First	PPT presentation: Effect of pollution on plant tissues/ animal tissues. LSEP-7
11	25-9-12	7:40 to 8:10 8:10 to 8:45	First, Second	Skit on Rutherford's experiment
	26-9-12	10:10 to 10:45 10:45 to 11:20	Fifth, Sixth	
12	7-11-12	8:45 to 9:20 9:20 to 9:55	Third, Fourth	Investigation – Electric Bill
	8-11-12	7:40 to 8:10 8:10 to 8:45	First, Second	
13	3-12-12	7:40 to 8:10 8:10 to 8:45	First, Second	Make Green Niche
	4-12-12	7:20 to 8:10	First	
14	4-3-13			Make Crystal Garden
	5-3-13			
15	5-1-12 7-1-12	7:40 to 8:10 8:10 to 8:45 10:10 to 10:45 10:45 to 11:20	First, Second Fifth, Sixth	Identify Me – Role Play
16	30-1-13 31-1-13			Mime – Identify the Class / Phylum
17	20-2-13	8:45 to 9:20 9:20 to 9:55	Third, Fourth	Project Grandma
18	23-3-13	10:10 to 10:45	Fifth, Sixth	Project Grandpa

		10:45 to 11:20		

Appendix_3.16

Observation Diary to Observe LSE Program

Total Number of Activities conducted during 2012-2013: 15

Class Strength of Experimental Group: 63

Number of groups: 9, Each group: 7 Students

The researcher observed each activity performed by each group of experimental group students as per observation schedule. Sample page of Observation diary for first activity conducted in the month of July. Such 9 tables were made for each activity. 135 such tables were made (9 x 15) and a booklet was formed.

Roll.No.	Date 28-07-12	Name of Team	Name of the Students	Indicators of Life Skill Observed
55	Activity Drama: Distance & Displacement	Pluto	Shahne Janhavi	
56			Shaikh Ayesha	
57			Shaikh Iqraa	
58			Shaikh Kareena	
60			Solanki Hemangi	
61			Surtani Avi	
63			Parmar Shubhangi	

While students of experimental group performed each activity of Life Skill Education Programme the researcher collected the data related to indicators of thinking skill as a participant observer and then found total number of indicators of each thinking skill for 1-5, 6-10, 11-15 activities respectively. This gave an idea about status of thinking skills in the beginning of LSEP, in the middle of LSEP and in last stage of LSEP.

Activity 1(a): Drama: Distinguish between Distance and Displacement

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29		Jupiter	Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	

33		Saturn	Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36			Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43		Uranus	Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50		Neptune	Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 1 (b): Distinguish between acceleration and Retardation

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	

30		Jupiter	Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
		Saturn		
36			Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
		Uranus		
43			Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
		Neptune		
50			Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
		Pluto		
57			Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	

62			Surtani Avi	
63			Parmar Shubhangi	

Activity 2 (a): Understand personal health in health museum

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	

28		Jupiter	Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36		Saturn	Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43		Uranus	Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50		Neptune	Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57			Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	

60		Pluto	Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 2 (b): Frequency of occurrence of Influenza amongst visitors in Sayaji Baug (Garden)

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22			Patel Kishan	
23			Patil Abhishek	

24		Mars	Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	
31		Jupiter	Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36		Saturn	Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
		Uranus		
43			Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49		Neptune	Parikh Rima	
50			Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	

57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 3 (a): Understand working of Newton's Second Law of motion

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15			Machchi Bhargav	
16			Machchi Bhavin	

17		Earth	Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27		Jupiter	Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32		Saturn	Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36		Uranus	Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43			Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	

50		Neptune	Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 3 (b): using Newton's Third law of motion

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	

15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29		Jupiter	Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36		Saturn	Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43		Uranus	Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	

48		Neptune	Panwar Varshika	
49			Parikh Rima	
50			Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 4: Colloids around you

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
		Venus		
8			Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	

14		Earth	Labbai Jishan	
15			Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
		Mars		
22			Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30		Jupiter	Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36			Ansari Irose	
37			Ansari Taslima	
38		Saturn	Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43			Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	

46		Uranus	Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50		Neptune	Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 5: Plant Cell / Animal Cell 3D model / PPT

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	

12		Earth	Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15			Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34		Jupiter	Surtani Gaurav	
35			Trivedi Nirmal	
36			Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43			Joshi Yashashree	

44		Uranus	Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50		Neptune	Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 6: Does gravity act more on the object of more mass?

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8			Gulam Hussain	
9			Joshi Gunjan	

10		Venus	Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32		Jupiter	Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36		Saturn	Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	

43		Uranus	Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50		Neptune	Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 7: Study of effect of pollution on tissues of plant / animal PPT

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8			Gulam Hussain	

9		Venus	Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
		Earth		
15			Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22			Patel Kishan	
23		Mars	Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	
33		Jupiter	Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36			Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
		Saturn		

42		Uranus	Fefar Nisha	
43			Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
		Neptune		
50			Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 8: Skit, Rutherford's gold Foil Experiment

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	

8			Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11		Venus	Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15			Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18		Earth	Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22			Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25		Mars	Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32		Jupiter	Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36			Ansari Irose	
37			Ansari Taslima	
38		Saturn	Arab Rushdabanu	
39			Bafna Honey	

40		Uranus	Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43			Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49		Neptune	Parikh Rima	
50			Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 9: An Investigation: Know Your Electricity Bill

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	

6		Venus	Choithwani Jatin	
7			Dheriwala Usama	
8			Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
		Earth		
15			Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	
31		Jupiter	Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36			Ansari Irose	
37			Ansari Taslima	

38		Saturn	Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
		Uranus		
43			Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50		Neptune	Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 10: Make you own “Green Niche”

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1			Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	

4		Mercury	Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	
31		Jupiter	Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	

36		Saturn	Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43		Uranus	Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50		Neptune	Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 11: Make “Crystal Garden”

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1			Akolkar Kalpit	

2		Mercury	Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29		Jupiter	Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	

35		Saturn	Trivedi Nirmal	
36			Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43		Uranus	Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50			Patel Ashwi	
51			Patel Shifa	
52		Neptune	Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57			Shahne Janhavi	
58			Shaikh Ayesha	
59		Pluto	Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 12: Identify the Element. Role Play: Who am I?

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29		Jupiter	Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	

33		Saturn	Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36			Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43		Uranus	Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50			Patel Ashwi	
51			Patel Shifa	
52		Neptune	Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 13: Mime: Identify the animal and its classification

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30			Shah Abhishek	

31		Jupiter	Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
		Saturn		
36			Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43			Joshi Yashashree	
44		Uranus	Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50			Patel Ashwi	
51		Neptune	Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57			Shahne Janhavi	
58		Pluto	Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	

63			Parmar Shubhangi	
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Activity 14: Project Grandma

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22		Mars	Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	
25			Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	

29		Jupiter	Sawant Manish	
30			Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35			Trivedi Nirmal	
36		Saturn	Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39			Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43		Uranus	Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50		Neptune	Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	
57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	

61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Activity 15: Project Grandpa

Roll No.	Date	Name of Team	Name of students	Indicators of thinking Skills
1		Mercury	Akolkar Kalpit	
2			Arab Nauman	
3			Bendbar Shivam	
4			Chandwani Dhiraj	
5			Chavan Kaustubh	
6			Choithwani Jatin	
7			Dheriwala Usama	
8		Venus	Gulam Hussain	
9			Joshi Gunjan	
10			Kadu Yatharth	
11			Kazi Abdul	
12			Kazi Faizal	
13			Kolekar Tanuj	
14			Labbai Jishan	
15		Earth	Machchi Bhargav	
16			Machchi Bhavin	
17			Mali Pratik	
18			Mistry Harsh	
19			Mutta Kashish	
20			Nagori Milan	
21			Patel Harsh	
22			Patel Kishan	
23			Patil Abhishek	
24			Pikle Yash	

25		Mars	Pradhan Saiyyam	
26			Saiyed Kamil	
27			Saiyed Almas	
28			Sapre Aaditya	
29			Sawant Manish	
30		Jupiter	Shah Abhishek	
31			Shah Darshan	
32			Shaikh Rehan	
33			Karwaniya Rushan	
34			Surtani Gaurav	
35		Saturn	Trivedi Nirmal	
36			Ansari Irose	
37			Ansari Taslima	
38			Arab Rushdabanu	
39		Uranus	Bafna Honey	
40			Chepuwala Rakiba	
41			Choithwani Jaimini	
42			Fefar Nisha	
43		Neptune	Joshi Yashashree	
44			Kedia Purvi	
45			Lalwani Naina	
46			Makwana Vidhi	
47			Mangtani Ria	
48			Panwar Varshika	
49			Parikh Rima	
50			Patel Ashwi	
51			Patel Shifa	
52			Patil Kajal	
53			Patil Margi	
54			Rajput Shivani	
55			Sarkar Alisha	
56			Shah Janvi	

57		Pluto	Shahne Janhavi	
58			Shaikh Ayesha	
59			Shaikh Iqraa	
60			Shaikh Kareena	
61			Solanki Hemangi	
62			Surtani Avi	
63			Parmar Shubhangi	

Appendix_3.17

Life Skill Education Programme (LSEP)

- The topics for Life Skill Education Program are chosen from the textbook of ‘Science and Technology’ of class IX recommended by Gujarat State board of Secondary and Higher Secondary Education, Gandhinagar.
- The order of topics is according to the order given by the Education Board for each Semester of the academic year 2012-2013.
- Each activity gives scope to the student to think which focuses on some or all indicators of thinking Skills chosen for the study.
- Details of each activity are mentioned under the column of ‘Activity’ with Instructions that will be provided to each group.
- Requirements for each activity are mentioned in its column with time and material needed.
- The sample size consisted of 63 students. When the activities are conducted in team, each team of 7 students conducted the LSE activity and presented it in the class. Thus 9 teams will present their activities.
- Some of the activities were performed individually.

Sr.No.	Topic	Main Objectives Thinking skills and their Indicators	Activity	Requirements
1	Motion	To develop critical thinking skill	Drama	For Drama
a)	Distinguish between distance and displacement	Ability to analyze the information, categorise the components of information on “Distance and displacement”	Students will enact a situation in which linear / circular / zigzag motion will be exhibited that will be woven in a story when they will calculate the distance and displacement and show the difference between them.	9 Teams composed of 7 students each who have compatibility and live near each other are required.
b)	Show acceleration and retardation and measure it.	To develop creative thinking skill	Play with Toy Students will play with a toy that moves on key or on battery and	Time allotted for preparation of the drama 2 days Time for presentation: 5 minutes per team For play with toy

		<p>Ability to think differently than others</p> <p>Ability to incorporate all aspects to generate new ideas,</p> <p>Ability to present new idea with confidence</p>	<p>show the difference in acceleration and retardation enacting the characters they have designed in a story.</p>	<p>Toy train, Toy Car, Scale, chalk, stop watch, a rope. On Saturday one period of 45 minutes will be allotted to conduct this activity. Each team will get 5 minutes.</p> <p>Time allotted for preparation of the story</p> <p>Time for presentation: 5 minutes per team</p>
<p>2</p> <p>a)</p> <p>b)</p>	<p>Why do we fall ill?</p> <p>To understand personal health.</p> <p>To find out the frequency of occurrence of Influenza amongst visitors of the Public garden.</p>	<p>To develop critical thinking skill</p> <p>Ability to analyze the information</p> <p>Ability to categorise the components of information</p> <p>Ability to challenge the assumptions behind the components of information</p> <p>Ability to judge or evaluate the authenticity and accuracy of information.</p> <p>To develop problem solving</p> <p>Ability to recognize that the problem exists.</p> <p>Ability to define the problem.</p>	<p>On any convenient day excursion will be planned to a public garden in the city in the month of July.</p> <p>Visit to the health museum</p> <p>Students will visit the health museum and work on any one of the topic, like: the reasons to fall ill, list the types of diseases, precautions to be taken, symptoms of some diseases and measures to cure the diseases. Topic for data collection will be chosen by lottery method by each team.</p> <p>Survey in the Public garden</p> <p>9 teams of 7 students will go to 9 different places in the public garden, stand in team and interview the visitors to know the status of “Common Cold” in their family, record their interview with prior permission and make a table</p>	<p>For visit to the health museum.</p> <p>Notepad, pencil, pen, camera / mobile with camera, scale, pencil, A₄ size paper to write the report.</p> <p>Time allotted for preparation of the report 30 minutes</p> <p>Time for presentation: 5 minutes per team</p> <p>For Survey in the public Garden</p> <p>Interviewer, Interviewee, Recording instrument/notepad, pen, A₄ size paper, scale, pencil.</p> <p>Time allotted for preparation of the report 30 minutes</p> <p>Time for presentation: 10 minutes per team</p>

		<p>Ability to think of many possible alternatives.</p> <p>To develop decision making skill</p> <p>Ability to list relevant choices,</p> <p>Ability to identify potential consequences of each choice</p> <p>Ability to assess the likelihood of each consequence actually occurring</p> <p>Ability to determine the importance of these consequences</p> <p>Ability to combine all this information to decide which choice is the most appropriate.</p>	<p>related to various components of data.</p> <p>The data collected during above activities will be presented by any team member of each team in the class.</p>	
<p>3</p> <p>a)</p> <p>b)</p>	<p>Force and Laws of Motion</p> <p>To understand how Newton's laws of motion work.</p> <p>To understand and use Newton's laws of motion</p>	<p>To develop problem solving skill</p> <p>Ability to recognize that the problem exists.</p> <p>Ability to define the problem.</p> <p>Ability to think of many possible alternatives.</p> <p>Ability to verify the</p>	<p>Make your own game to play Catch the fly (food chain)</p> <p>Instruction card :</p> <p>Take a stiff greeting card, draw or paste the picture of wall lizard on one side, paste pieces of plastic straws as shown in picture at given angle, pass the thread through the straws, hang the upper U part of thread on the nail, pull thread on any one side the lizard will move to</p>	<p>For making your own game</p> <p>Postcards/greeting cards, thread, cello tape, scissors/blade, plastic straws, hook on the wall, sketch pens or colourful stickers, Instruction card. 30 minutes time will be given to each student to make the toy. One instruction card will be provided between two students.</p> <p>Time allotted for preparation of the toy 30 minutes</p> <p>Time for presentation: 2 minutes per</p>

		<p>result of the solution.</p> <p>To develop creative thinking skill</p> <p>Ability to think differently than others</p> <p>Ability to incorporate all aspects to generate new ideas</p> <p>Ability to present new idea with confidence</p> <p>To develop decision making skill.</p> <p>Ability to list relevant choices,</p> <p>Ability to identify potential consequences of each choice</p> <p>Ability to assess the likelihood of each consequence actually occurring</p> <p>Ability to determine the importance of these consequences</p> <p>Ability to combine all this information to decide which choice is the most appropriate.</p>	<p>catch the fly you pasted near the nail. Explain food chain using this toy that works on Inertia and Newton's laws.</p> <p>Make your own toy boat that will move on water.</p> <p>Instruction card:</p> <p>Take an empty bottle of shampoo, tie two brand new unsharpened pencils to the bottle with a rubber band on both sides in such a way that equal portions of pencils protrude. Fix a rudder made of thick plastic behind the bottle at the protruding ends of pencils. When the rudder is unwound in water it should move ahead. Decorate your boat as you like.</p>	<p>student</p> <p>For making your own boat</p> <p>Empty, small, shampoo-plastic bottle, two long rubber bands, a piece of hard plastic (3cm x 2cm) size, cutter, candle, match box, two new pencils, tub full of water, plasticine clay, plastic straw, coloured marble paper, a tub full of water to test the toy, Instruction Card.</p> <p>Time allotted for preparation of the toy 30 minutes</p> <p>Time for presentation: 2 minutes per student.</p>
4	<p>Properties of matter</p> <p>To identify "colloids"</p>	<p>To develop problem solving</p> <p>Ability to recognize that the problem</p>	<p>SEMINAR</p> <p>Theme Presentation: Choose any one colloid around you and explain its type, properties, application,</p>	<p>For SEMINAR</p> <p>Computer, CD, Computer Laboratory</p> <p>One week time will be given to prepare the CD.</p>

	around you”	<p>exists.</p> <p>Ability to define the problem.</p> <p>Ability to think of many possible alternatives.</p> <p>Ability to verify the result of the solution.</p> <p>To develop decision making skill</p> <p>Ability to list relevant choices,</p> <p>To develop creative thinking skill</p> <p>Ability to think differently than others</p> <p>Ability to incorporate all aspects to generate new ideas</p> <p>Ability to present new idea with confidence</p> <p>To develop critical thinking skill</p> <p>Ability to analyze the information</p> <p>Ability to categorise the components of information on types of colloids used in real life.</p>	<p>use, commercial advertisement for its sale, disadvantages if any, products similar to the one you have chosen.</p> <p>Present the theme in team with the help of PPT</p>	<p>Those who cannot avail computer and Internet facility can present the project with real objects, charts and newspaper cuttings etc,</p> <p>Time allotted for preparation of the project: one week</p> <p>Time for presentation: 10 minutes per team.</p>
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5	<p>The fundamental unit of life – “The Cell”</p> <p>To know and understand the function of each component of cell</p>	<p>To develop creative thinking skill</p> <p>Ability to think differently than others</p> <p>Ability to incorporate all aspects to generate new ideas</p> <p>Ability to present new idea with confidence</p> <p>To develop problem solving skill</p> <p>Ability to recognize that the problem exists.</p> <p>Ability to define the problem.</p> <p>Ability to think of many possible alternatives.</p> <p>Ability to verify the result of the solution.</p> <p>Ability to verify the process attempted to solve the problem.</p>	<p>Project presentation in SEMINAR</p> <p>Make a presentation on any one component of cell in the form of 3-D chart with your team.</p> <p>Any component of plant cell or animal cell like Golgi body, mitochondria, chloroplast, nucleus, endoplasmic reticulum etc will be drawn on the chart paper, with 3D effect by using different material like plasticine clay, wool, threads, bangles, sponge etc.</p> <p>Each member of every team will describe part of the cell organelle while presenting the project.</p>	<p>For project presentation.</p> <p>Any waste material like plastic wires, threads, pencil shavings, waste news paper, seeds which are thrown in kitchen, rubber bands, or any other material available, chart paper, colours, sketch pens, scale etc.</p> <p>Time allotted for preparation of the project: one week</p> <p>Time for presentation: 10 minutes per team.</p>
6	<p>Gravitation</p> <p>To understand the relation between gravity and mass of the object chosen.</p>	<p>To develop Critical thinking skill</p> <p>Ability to analyze the information by identifying the components of information</p> <p>Ability to categorize or classify the components of the information,</p>	<p>An Investigation</p> <p>Project: Does gravity act more on the stone of more mass?</p> <p>Format for written report:</p> <p>Title / Aim</p> <p>Introduction</p> <p>Conceptual framework</p> <p>Material needed</p> <p>Time needed</p>	<p>For Investigation</p> <p>10 Stones from same place (same composition) but of different mass, Stop watch, 4 storied building, meter tape, notebook, pen, teammates, 2 foolscap papers</p> <p>Time needed: One week</p> <p>Presentation: 5 minutes per team</p>

		<p>Ability to challenge the assumptions behind the components of information, Ability to judge or evaluate the authenticity and accuracy of information</p> <p>Ability to systematically arrange the components to arrive at conclusion.</p> <p>To develop problem solving skill</p> <p>Ability to recognize that the problem exists.</p> <p>Ability to define the problem.</p> <p>Ability to think of many possible alternatives.</p> <p>Ability to verify the result of the solution.</p> <p>Ability to verify the process attempted to solve the problem.</p>	<p>Procedure</p> <p>Observation</p> <p>Conclusion</p>	with written report.
7	<p>Plant Tissues and animal tissues</p> <p>To know the effect of pollution on different types</p>	<p>To develop critical thinking skill</p> <p>Ability to analyze the information by identifying the components of information</p>	<p>Presentation:</p> <p>Each team of students will find out the effect of pollutants on the tissues of animal or plant through internet or by performing experiment. After one week each</p>	<p>For Presentation of project:</p> <p>Experimental apparatus, a plant, CD, Computer, Internet connection, Chart, pencils, colours and the team of students</p> <p>Time needed: One week</p>

	<p>of plant tissues and animal tissues and understand role of each tissue in the plant/animal body</p>	<p>Ability to categorize or classify the components of the information, Ability to challenge the assumptions behind the components of information, Ability to judge or evaluate the authenticity and accuracy of information To develop problem solving skill Ability to recognize that the problem exists. Ability to define the problem. Ability to think of many possible alternatives. To develop creative thinking skill Ability to think differently than others Ability to incorporate all aspects to generate new ideas Ability to present new idea with confidence</p>	<p>team will present it in the class with written report. Effect of Pollution on the tissues of plant/animal. Experiment/ PPT/ Oral presentation with a chart</p>	<p>Presentation: 5 minutes per team with written report.</p>
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8	Structure of Atom Rutherford's Gold Foil Experiment	To develop critical thinking Ability to analyze the information by identifying the components of information Ability to categorize or classify the components of the information To develop creative thinking skill Ability to think differently than others Ability to incorporate all aspects to generate new ideas Ability to present new idea with confidence To develop problem solving skill Ability to recognize that the problem exists. Ability to define the problem. Ability to think of many possible alternatives. To develop decision making skill Ability to list relevant choices Ability to identify potential	Skit Present Rutherford's Gold foil experiment in the form of a skit written by your team. Characters: Rutherford the great Scientist, Slow moving neutrons, atoms of gold foil, source of energy, electrons, protons, the team of scientists.	Props made of cardboard, paper and colours like positive electromagnetic field, negative electromagnetic field, vacuum pump; team of students, video camera, voice recording machine Time needed: One week Presentation: 5 minutes per team with written report.
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		consequences of each choice		
9	<p>Work, Energy and Power</p> <p>Electrical Energy</p>	<p>To develop critical thinking</p> <p>Ability to analyze the information by identifying the components of information</p> <p>Ability to categorize or classify the components of the information</p> <p>Ability to challenge the assumptions behind the components of information,</p> <p>Ability to judge or evaluate the authenticity and accuracy of information</p> <p>Ability to systematically arrange the components to arrive at conclusion.</p> <p>To develop problem solving skill</p> <p>Ability to recognize that the problem exists.</p> <p>Ability to define the problem.</p> <p>Ability to think of many possible</p>	<p>An Investigation Project “Know your electricity bill.”</p> <p>7 students of each team will collect zerox copies of electric bill of past six months of their home. After attending an expert’s talk on ‘how to read electric bill’ they will study the pattern of consuming units of electricity of each house and decide certain steps to reduce the consumption. Design a plan of action, follow the plan of action meticulously at home, try to reduce the consumption and get the graphs of consumption before the activity and after the activity. 9 such teams will present their data in the form of power point presentation in the computer lab.</p>	<p>For Investigation Project: “Know your electricity bill”</p> <p>Electricity bills of 6 previous months, Record of the meter reading, Chart of consumption per week, Chart depicting reduction in consumption, Chart showing methods adopted to SAVE electricity and teammates.</p> <p>Time needed: One week</p> <p>Presentation: 5 minutes per team with written report.</p>

		<p>alternatives.</p> <p>To develop Decision making skill</p> <p>Ability to list relevant choices</p> <p>Ability to identify potential consequences of each choice</p> <p>Ability to assess the likelihood of each consequence actually occurring, Ability to determine the importance of these consequences.</p> <p>Ability to combine all this information to decide which choice is the most appropriate.</p>		
10	<p>Diversity in Living Oraganisms-1</p> <p>To study Algae Fungus Monocotyledons Dicotyledons around you.</p>	<p>To develop critical thinking skill</p> <p>Ability to analyze the information by identifying the components of information</p> <p>Ability to categorize or classify the components of the information</p> <p>To develop creative thinking skill</p> <p>Ability to think differently than others</p> <p>Ability to incorporate all aspects to generate</p>	<p>Make your own “Green Niche”</p> <p>Locate the place around your school/home to collect samples of algae/fungus/monocotyledons or dicotyledons. Make a herbarium in suitable containers or transparent boxes.</p>	<p>For making Herbarium</p> <p>Samples of algae/fungus/monocotyledons/dicotyledons, Album of samples made by using recycled cardboard and paper.</p> <p>Time needed: One week</p> <p>Presentation: 5 minutes per team with written report.</p>

		<p>new ideas Ability to present new idea with confidence</p> <p>To develop problem solving skill. Ability to recognize that the problem exists. Ability to define the problem. Ability to think of many possible alternatives.</p>		
11	<p>Chemical Bonding Formation of Ionic compound.</p>	<p>To develop critical thinking skill Ability to analyze the information by identifying the components of information Ability to categorize or classify the components of the information</p> <p>To develop problem solving skill Ability to recognize that the problem exists. Ability to define the problem. Ability to think of many possible alternatives.</p>	<p>“Make your crystal garden” To make an Ionic Compound NaCl / CuSO₄. Students will take common salt in a container, make concentrated solution of salt in water, tie a very small crystal of salt to the thread, and allow it to remain immersed in water, place the glass container of salt solution in the window hang the thread in the window. Allow the glass container to remain in the window undisturbed till the crystal is formed. Form colourful crystals by adding colour and present it.</p>	<p>‘My Crystal Garden’ Common salt or Copper Sulphate powder, water, containers, stirrer, strainer, thread, hanger, empty glass jar Time needed: One week Presentation: 5 minutes per team with written report.</p>

12	<p>Periodic Classification of Elements</p> <p>S – Block P – Block D – Block F - Block</p>	<p>To develop creative thinking skill Ability to think differently than others Ability to incorporate all aspects to generate new ideas, Ability to present new idea with confidence</p> <p>To develop critical thinking skill Ability to analyze the information by identifying the components of information, Ability to categorize or classify the components of the information</p> <p>To develop problem solving Ability to recognize that the problem exists. Ability to define the problem.</p> <p>To develop decision making skill. Ability to list relevant choices, Ability to identify potential consequences of each choice</p>	<p>Role Play- WHO AM I?</p> <p>1) Represent each block elements through drama. 2) Depict the main characteristics of the elements in any one block. 3) Show why they belong to that block through dialogues. Sound and light can be used to add to the effect. Students will write a script on the elements belonging to the block they have chosen will enact like electrons, orbits and elements and show their properties. At the end the team will ask the audience to identify the block they belong to!</p>	<p>For drama ‘Who am I?’ A team of students, props like periodic table of elements, block to be presented, chart showing specific property of elements in that block etc. video camera, tape recorder if needed. Time needed: One week Presentation: 5 minutes per team with written report.</p>
13	<p>Diversity in Living Organisms – 2 Annelids</p>	<p>To develop critical thinking skill Ability to analyze the</p>	<p>To present the characteristics of animal of chosen phylum through Mime. Mime is a role play without</p>	<p>Material Requirements: team of students, props displaying characteristics, chart showing specific</p>

	Arthropods Pisces	<p>information by identifying the components of information</p> <p>Ability to categorize or classify the components of the information</p> <p>To develop creative thinking skill</p> <p>Ability to think differently than others</p> <p>Ability to incorporate all aspects to generate new ideas</p> <p>Ability to present new idea with confidence</p> <p>To develop problem solving skill</p> <p>Ability to recognize that the problem exists. Ability to define the problem.</p> <p>To develop decision making skill</p> <p>Ability to list relevant choices, Ability to identify potential consequences of each choice</p>	<p>sound, without dialogues. Teams of students to display the characteristics of the animal chosen of chosen phylum. Other classmates were supposed to identify the animal, its phylum and its class.</p>	<p>property of species in that particular class and video camera if possible.</p> <p>Time to prepare one week. Each group 10 minutes for Presentation, Presentation followed by question-answer session.</p>
14	<p>Our Natural Resources</p> <p>Natural Resource around you.</p>	<p>To develop critical thinking skill</p> <p>Ability to analyze the information by identifying the components of information</p>	<p>PROJECT: “GRANDMA”</p> <p>Individual activity</p> <p>Student of each team will meet at least 10 grandmothers or great grandmothers and find the methods used by them to recycle and reuse</p>	<p>For project “Grandma”</p> <p>Individual activity</p> <p>Voice recorder / video recorder, notepad, pen interviewer and interviewee.</p> <p>2 foolscaps to write a report.</p>

		<p>Ability to categorize or classify the components of the information</p> <p>To develop creative thinking skill</p> <p>Ability to think differently than others</p> <p>Ability to incorporate all aspects to generate new ideas</p> <p>Ability to present new idea with confidence</p> <p>To develop problem solving skill</p> <p>Ability to recognize that the problem exists.</p> <p>Ability to define the problem.</p> <p>To develop decision making skill</p> <p>Ability to list relevant choices</p> <p>Ability to identify potential consequences of each choice</p>	<p>the resources.</p> <p>OR Prepare a report on the medicinal plants used by your family and relatives.</p>	<p>Time needed: One week</p> <p>Presentation: 2 minutes per student with written report.</p>
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15	<p>Food Resources</p> <p>Food resources around you</p>	<p>To develop critical thinking skill Ability to analyze the information by identifying the components of information Ability to categorize or classify the components of the information To develop creative thinking skill Ability to think differently than others Ability to incorporate all aspects to generate new ideas Ability to present new idea with confidence To develop problem solving skill Ability to recognize that the problem exists. Ability to define the problem. To develop decision making skill Ability to list relevant choices Ability to identify potential consequences of each choice</p>	<p>PROJECT:“GRANDPA” Individual activity Instructions: Meet at least 10 grandfathers and find the food items consumed by people since last 100 years in your state and the role of farm fresh and homemade food products in the development of family with respect to economic and health status. Prepare a structured interview for collection of data.</p>	<p>For project “GRANDPA” Individual activity Voice recorder / video recorder if possible, notepad, pen interviewer and interviewee. 2 foolscaps to write a report. Time needed: One week Presentation time: 5 minutes per team with written report.</p>
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Appendix_3.18

Opinionnaire Part A

Each student of experimental group was given following sheet to opine about their like or dislike. Students of Experimental Group were asked “Dear Students this data sheet asks your true and frank opinion about the activities that is conducted during the academic year 2012-2013 under Life Skill Education Program. The first column of the table shows name of the activity and you are supposed to tick mark your choice of preference in the columns shown in the right.”

Sr. No.	Name of the topic in the textbook of ‘Science and Technology’ and activity for Formative Assessment under LSE program		
		Like	Dislike
1	Motion: Acceleration / Retardation Drama ‘My Toy’		
2	Why do we fall ill? ‘Health Survey’ On any convenient day excursion will be planned to a public garden in the city in the month of July. ‘Visit to the health museum’		
3	Force and Laws of Motion Make your own game to play Catch the fly (food chain) Make your own toy boat that will move on water.		
4	Properties of matter : SEMINAR Theme Presentation through PPT		
5	The fundamental unit of life – “The Cell” Project presentation in SEMINAR Make a presentation on any one component of cell in the form of 3-D chart/model with your team.		
6	Gravitation: An Investigation Project: Does gravity act more on the stone of more mass?		

7	Plant Tissues and animal tissues Presentation: PPT/ Oral presentation with a chart		
8	Structure of Atom Skit Present Rutherford's Gold foil experiment		
9	Work, Energy and Power An Investigation Project "Know your electricity bill."		
10	Diversity in Living Organisms-1 "Make a Green Niche"		
11	Chemical Bonding "Make your crystal garden"		
12	Periodic Classification of Elements DRAMA- WHO AM I?		
13	Identify the Phylum, Identify the animal Mime		
14	Our Natural Resources PROJECT: "GRANDMA"		
15	Food Resources PROJECT:"GRANDPA" Individual activity		

Appendix_3.19

Opinionnaire – Part B

Section I

Name of the student:

Roll No:

Give free and frank opinion for improvement in the instructional processes of **‘Teaching of Science’** through following activities. Please underline your choice to select any one level of difficulty in performing LSEP activity from the given choice. Put a tick mark before any suggestion that you agree with from the list given at the end of the paper.

1. A) Drama to distinguish between distance and displacement:

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

1. B) Play with your toy and show acceleration and retardation

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

2. Visit to Health Museum:

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

3. Health Survey in Sayaji Baug:

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

4. A) Make your own game to play: Catch the fly

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

4. B) Make your own toy boat

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

5. Seminar: Theme: Colloids around you / Present an advertisement

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

6. Project Presentation: PPT/ Three D chart of cell organelles of plant cell or animal cell.

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

7. Project Gravity: Does gravity act more on the stone of more mass?

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

8. Project: PPT presentation on effect of pollution on plant tissue or animal tissue.

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

9. Investigation: Know your electricity bill.

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

10. Make a Green Niche: Monocots and dicots, Algae, Fungus.

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

11. My Crystal Garden: Individual activity.

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

13. Role Play: Identify Me, (element of the allotted group of periodic table)

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

14. Project Grandma: Individual activity

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

15. Project Grandpa: Individual activity.

Opinion:

- a) Very easy b) easy c) difficult d) very difficult e) extremely difficult

Section II

Suggestion / suggestions: Tick the statement you agree with.

- a) More time should be given to prepare and perform the activities.
- b) Evaluation through activities is best, no written exam should be held
- c) More outdoor activities should be included
- d) Evaluation through LSEP should be followed by SSC board in tenth standard
- e) Activities like drama, seminar presentations, mime, role play should be there for each topic in each subject in place of written exam
- f) More of 3-D model making, working model making should be included
- g) If school time is less, then holidays can be used
- h) More group activities should be included
- i) Laboratory based activities should be included in LSEP
- j) Test papers of school exams should be like pretest and posttest, situation based
- k) Students should be allowed to form groups with students of their choice

Appendix_3.20

Programme Feedback Sheet

Principal and other subject teachers of Jeevan Sadhana English Medium High School were asked to tick mark if they agree to the fact that students had fun while doing the activity, used critical thinking skill, used creative thinking skill, used decision making skill and used ability to solve the given problem. This table shows their opinions based on their observations during implementation of LSEP. The Programme Feedback Sheet is about their agreement / disagreement for scope to develop life skills mentioned before each activity.

Sr. No.	LSEP Number	Type of activity	Fun	Critical Thinking	Creative Thinking	Decision Making	Problem Solving
1	(1-a)	Drama					
2	(1-b)	Play with Toy-drama					
3	(2-a)	Investigation-Health Museum					
4	(2-b)	Health Survey					
5	(3-a)	Make a toy – Catch the fly					
6	(3-b)	Make a toy- Boat					
7	4	Seminar (PPT / Chart)					
8	5	Seminar with Model					
9	6	Investigation-Gravity					
10	7	Seminar- PPT					
11	8	Skit					
12	9	Investigation - Electric bill					
13	10	Make Green Niche					
14	11	Make Crystal Garden					
15	12	Identify Me – Role Play					
16	13	Mime Identify the Class					
17	14	Project Grandma					
18	15	Project Grandpa					