

Appendices

Preparation of TEA



Process

- After collecting all the ingredients and apparatus for preparation of tea, there is need to exercise choice for pan. After that drinking water is collected.
- Then the gas is burnt with the help of lighter/match box. There is need to regulate the desired volume of the flame.
- After boiling water, it's time to add dry tea leaves, basil, grated ginger, black pepper, green tea leaves, fudina and cardamom.
- After extraction of these things there is need to add sugar and milk. Boil for some time and pour it in tea pot, serve it in cups and enjoy Tea. This is the simple recipe for Tea.

Emerging Questions

- What ought to be the characteristics of the Pan use for tea preparation?
- What is the chemical composition of all the ingredients used in preparation of tea?
- Why water for extraction of ingredients?
- What is the chemical composition of the various materials?
- What are the contents of the prepared tea?

Apparatus

- | | |
|-------------------|----------------------------|
| • Pan | • Stove/Gas |
| • Water container | • Kettle/Tea Pot |
| • Milk container | • Dry Tea leaves container |
| • Sieve | • Sugar container |
| • Cup and saucer | • Lighter/Match Box |
| • Mug | |
| • Pair of tongs | |

Materials

- Water
- Milk / Milk Powder
- Dry Tea Leaves
- Basil
- Sugar/ Sugar free Tablets
- Ginger
- Green Tea
- LPG/ Kerosene
- Elaichi

classification

- Classify this listed apparatus and materials used in preparation of tea in three category i.e. solid, liquid and Gaseous.
- Properties of solid, liquid, Gaseous, Metal, Water, colloidal solution and Milk.

Pan



Pan / Container

- Metal / Material of Pan
- Size of Pan
- Shape of Pan
- Edges of the Pan
- Molding of Pan
- Neck of Pan
- Handle of Pan
- Base of Pan

Material

- Made up of which material?
- Conductance
- Reaction with edibles material
- Surface
- Luster
- Chemical composition of edible material used for preparation of Tea.

Water container



Water container

- Metal / Material of Container
- Size of Container
- Shape of Container
- Edges of the Container
- Molding of Container
- Neck of Container
- Colour of Container

Milk container and Lid



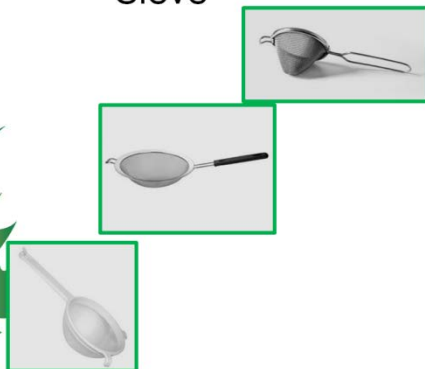
Milk container

- Metal / Material of container
- Size of Milk container
- Shape of container
- Edges of the container
- Molding of container
- Neck of container
- Lid of Milk container

Milk container

- Metal / Material of container
- Size of Milk container
- Shape of container
- Edges of the container
- Molding of container
- Neck of container
- Lid of Milk container

Sieve



Sieve

- Material of sieve
- Mesh size of sieve
- Importance of Mesh size

Cup and saucer



Cup and saucer

- Material
- Size
- Shape
- Properties

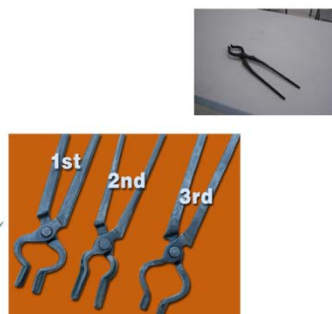
Mug



Mug

- Material
- Size
- Shape

Pair of tongs



Pair of tongs

- Material
- Size
- Shape
- Science Principle

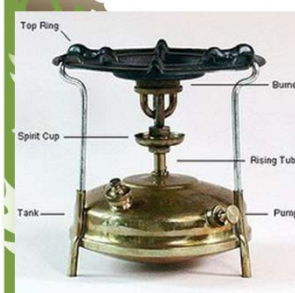
Types of Lever	Fulcrum	Work	Force	Example
First	Middle	One side	Other side	Scissor, Pairs of tong
Second	One side	Middle	Other side	Screw driver,
Third	One side	Other side	Middle	Forceps

Stove/Gas



Stove

Kerosene



Stove/Gas

- Material
- Size
- Shape
- Science Principle
- Fuel used
- Environment friendliness

Kettle/Tea Pot



Kettle/Tea Pot

- Material
- Size
- Shape
- Science Principle

Container



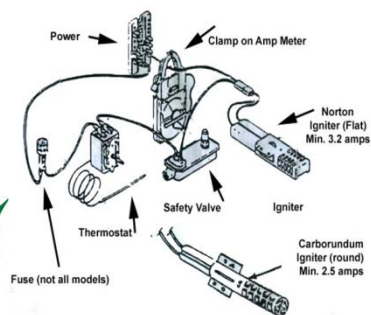
Container

- Material
- Size
- Shape
- Science Principle

Lighter



Lighter



Match Box



Edible Material

- Chemical composition
- Effect on human body
- Side effect on human body
- Affect on environment

Properties

- Properties of Milk
- Properties of Water
- Properties of LPG
- Properties of Metal

Milk / Milk Powder



Water and Milk



LPG



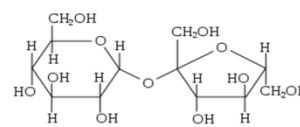
Component of Milk

- The constituents of milk are
- Water
- Lipids
- Carbohydrates
- Proteins
- Vitamins
- Minerals.

Sugar/ Sugar free Tablets



- Molecular Formula of sucrose:
 $C_{12}H_{22}O_{11}$
- Structural Formula:



Sucrose

Sugar Free Powder/ Tablet

- Artificial sweetening agents
- Stevia, aspartame, sucralose, neotame, acesulfame potassium, and saccharin.

Tea Leaves



Compounds present in Tea Leaves

- Polyphenols
- Flavanols
- Amino Acids
- Enzymes
- Methylxanthines

Medicinal uses of different herbs used in preparation of tea

Ginger



Zingiberofficinale

Ginger root is effective in reducing nausea and also may be useful in reducing the pain, stiffness, and immobility of arthritis. Ginger has also has a long history of use as an ant nausea herb recommended for morning sickness, motion sickness, and nausea that accompanies gastroenteritis (more commonly called stomach flu). As a stomach-calming agent, ginger also reduces gas, bloating, and indigestion, and aids in the body's use and absorption of other nutrients and medicines. It is also a valuable deterrent to intestinal worms, particularly roundworms.

Cardamom



Elettariacardamomum

Cardamom is used as flavorings in both food and drink, as cooking spices and as a medicine. Green cardamom is broadly used in South Asia to treat infections in teeth and gums, to prevent and treat throat troubles, congestion of the lungs and pulmonary tuberculosis, inflammation of eyelids and also digestive disorders. It also is used to break up kidney stones and gall stones, and was reportedly used as an antidote for both snake and scorpion venom.

Basil



Ocimumtenuiflorum

Basil used as Healing Power, Fever & Common Cold, Coughs, Sore Throat, Respiratory Disorder, Kidney Stone, Heart Disorder, Children's Ailments, Stress, Mouth Infections, Insect Bites, Skin Disorders, Teeth Disorder, Headaches, Eye Disorders

Black Pepper



Piper Nigrum

Black pepper has been used for digestive disorders, such as indigestion, vomiting, diarrhea, and flatulence. black pepper is used to improve digestion, stimulate appetite, and treat gastrointestinal problems, including diarrhea, dyspepsia and flatulence. It is also used to treat colds, coughs and sore throats.

Fudina



Mentha Arvensis

The dried leaves and flowering tops of the plant make the drug pappoermint, this drugs use in treatment of vomiting and nausea. Bruished leaves are applied in headache and other pains. The main use of drugs is or extraction for pappermint oil and is largely used in medicine for stomach disorders the oil is also "antiseptic" at here is several name of (pudina) like koshu, horsemint.

Science Principle/Mechanism in various material and apparatus

• Lighter (Friction)

According to Newton's first law in absence of external force body should maintain its motion with constant velocity. But instead of velocity remaining constant it reduces gradually and after travelling some distance body comes to halt. This force which opposes motion of the body is called as force of friction. When a body moves on a surface, keeping contact with the surface, force exerted by the surface on moving body, which opposes motion of the body is called frictional force.


- Structure of Tea Mug (upper portion of tea mug is broader than lower portion. Broader portion will help to make tea cold earlier due to more surface area is in contact with environment and lower narrow portion kept tea hot due to small surface area in contact with environment.)
- Structure of double layer Tea Mug (outer layer of mug is not in contact with hot tea so its temperature is normal as environmental temperature, inner layer is not directly in contact with environment so it kept tea hot.)

- Brightness of sugar (by passing sugar syrup through activated charcoal it decolourized syrup and increase the brightness of sugar.)
- Stove (combustion converts fluid energy in to heat which will help to prepare food, tea, boil water.)
- conversion of electric energy in to thermal energy e.g. Electric coil, Induction stove
- Shape of Pan (utility of generated thermal energy)
- Size of Pan (utility of generated thermal energy and volume (capacity) to holding material used for preparing tea)

- Metal of Pan (reaction with edible material and conductor of heat)
- Thickness of Pan (transfer of energy)
- Base of Pan for balance on other surface like stove, induction coil, electrical coil etc.
- Surface area of sugar powder and sugar (reaction time will be reduced)
- Crystalline sugar (crystallization)

Development of Psychomotor Domain


- Handling of different material and apparatus used in preparation of tea
- Handling of Gas stove, lighter, match sticks etc.
- Pouring tea from pan to mug or cup



- Cleanliness of platform during and after preparation of tea
- Handling of hot pan with cloth (which type of cloth is safe for handling hot pan?), or pan has Insulated handle, wooden handle




Health and Environment



- Usefulness of different edible material to human being
- Useful amount of different edible material used in preparation of tea for human being
- Usefulness of used tea leaves for plants
- Milk is wholesome meal
- Excessive tea is harmful for health.




Spiritual Aspect




- All the materials used in preparation of tea have their own characteristics and importance but they gathering in appropriate manner and made Tea. Separately every material has their own essence, flavour and fragrance but in Tea there is oneness.
- Water is a good solvent



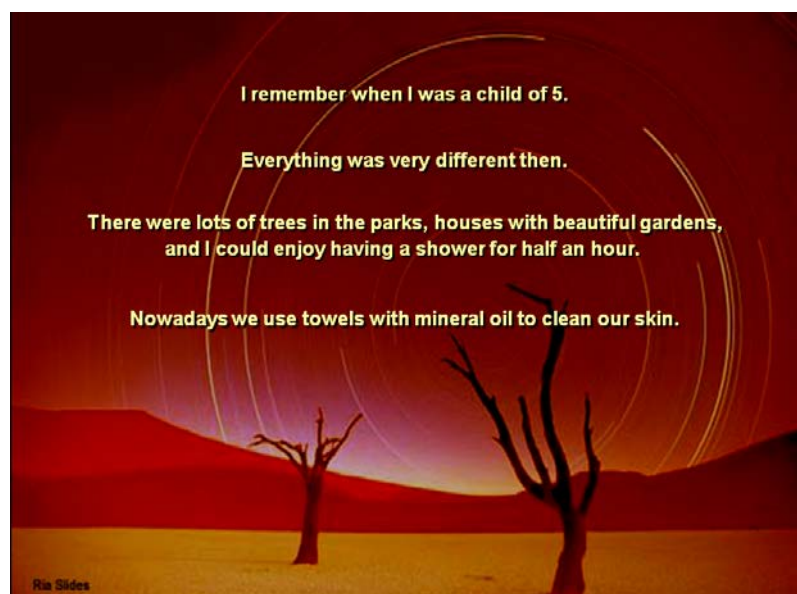
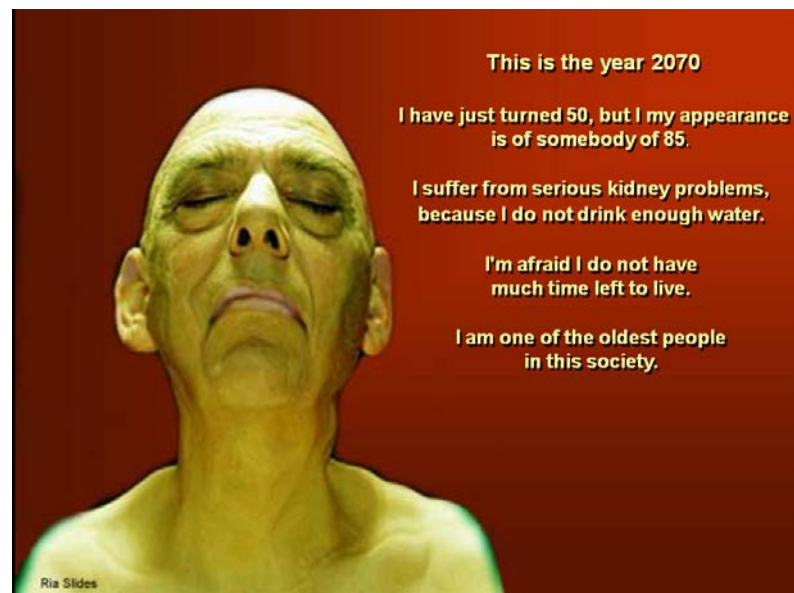
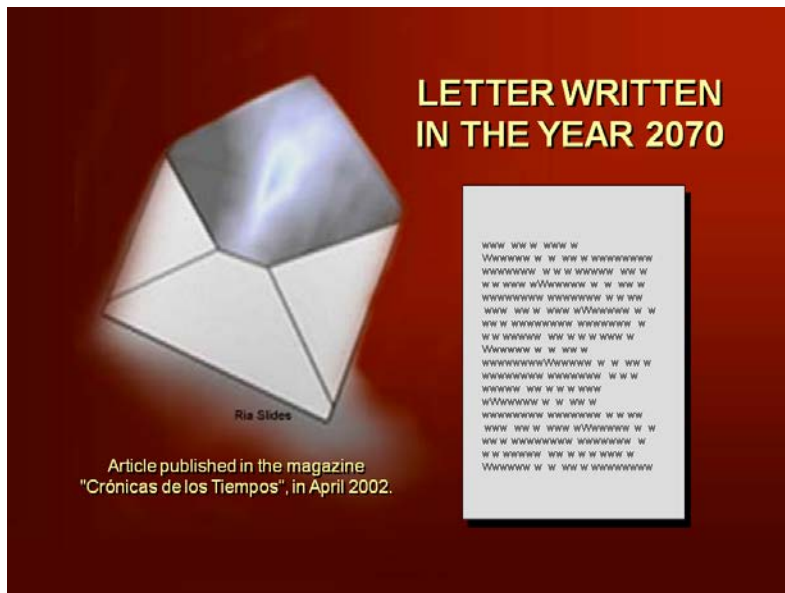
Affective Domain

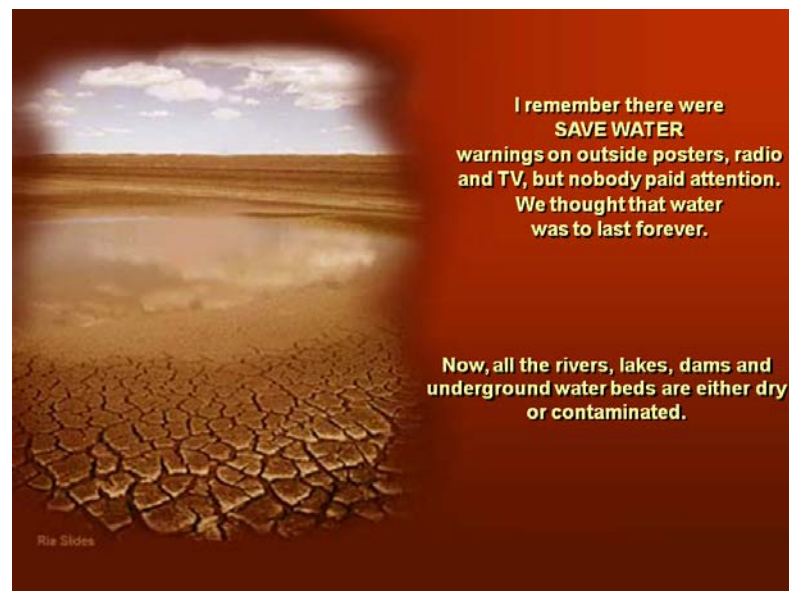
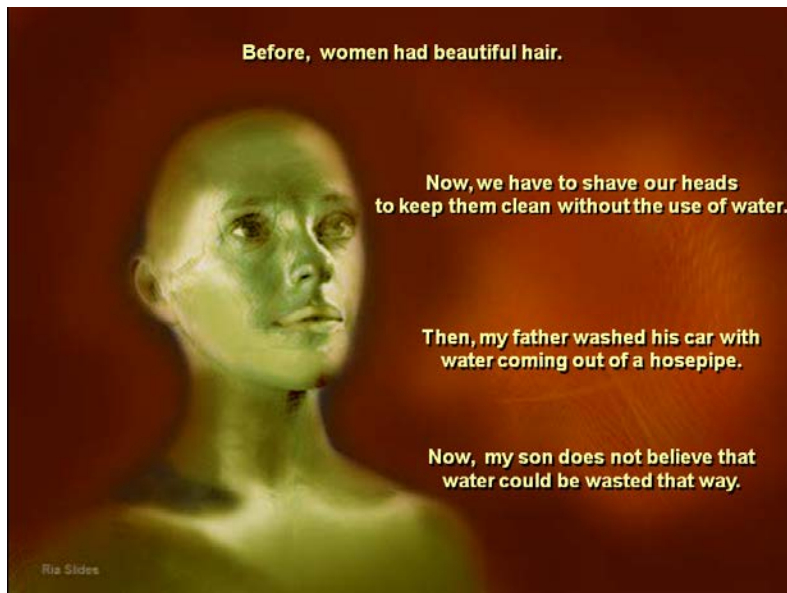


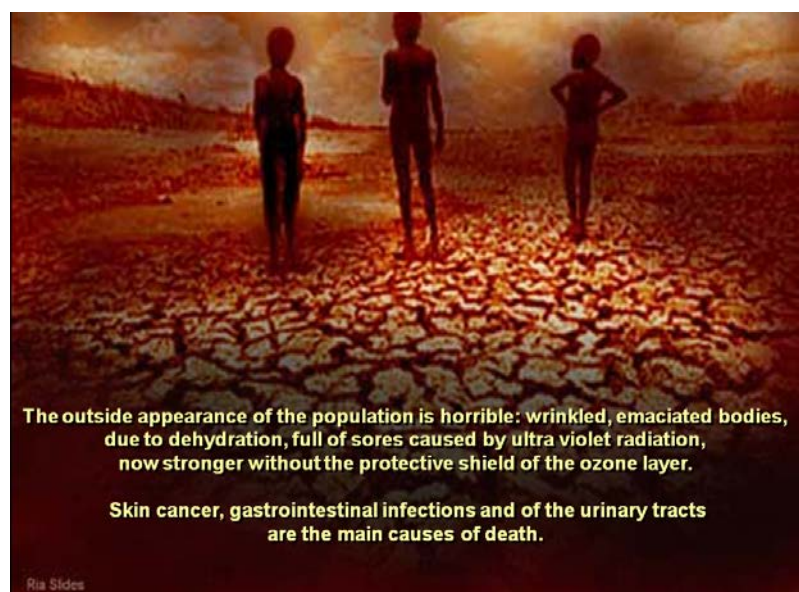
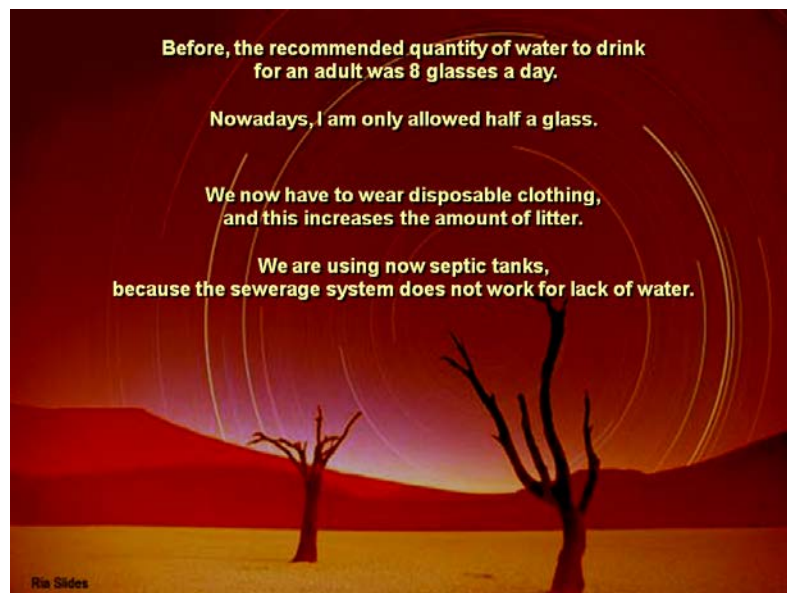
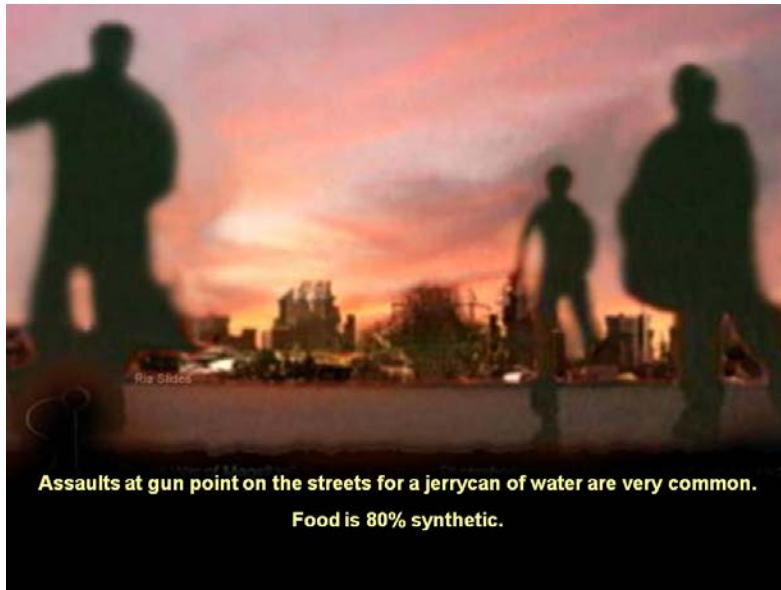
- Effect of edible material used in tea on human body
- Affection of water towards different material used in preparation of tea
- Affection regarding workers working in different area tea garden, tea factory, gas factory, stove factory, fuel vendors, metal factory
- Affection of person making tea

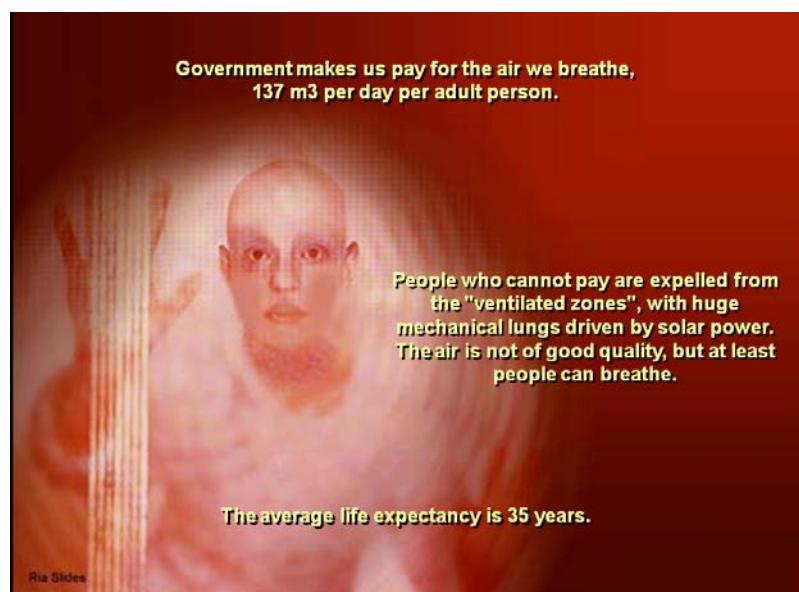
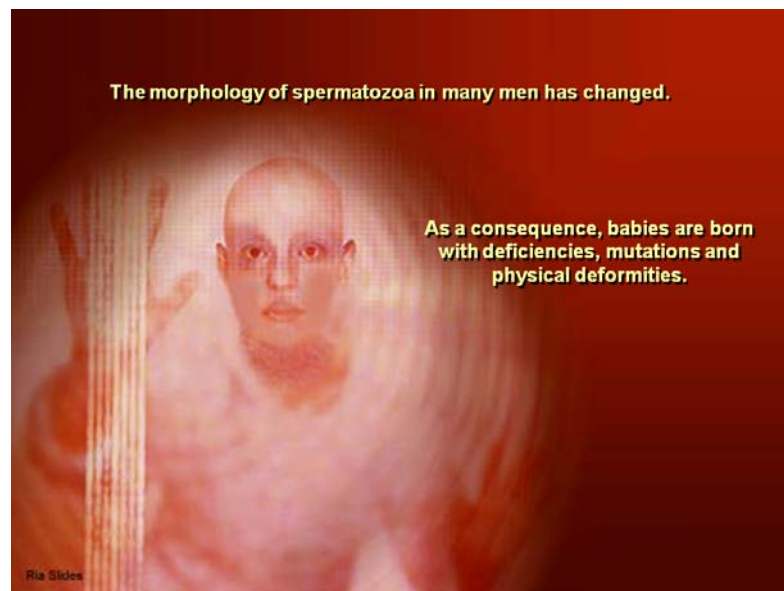
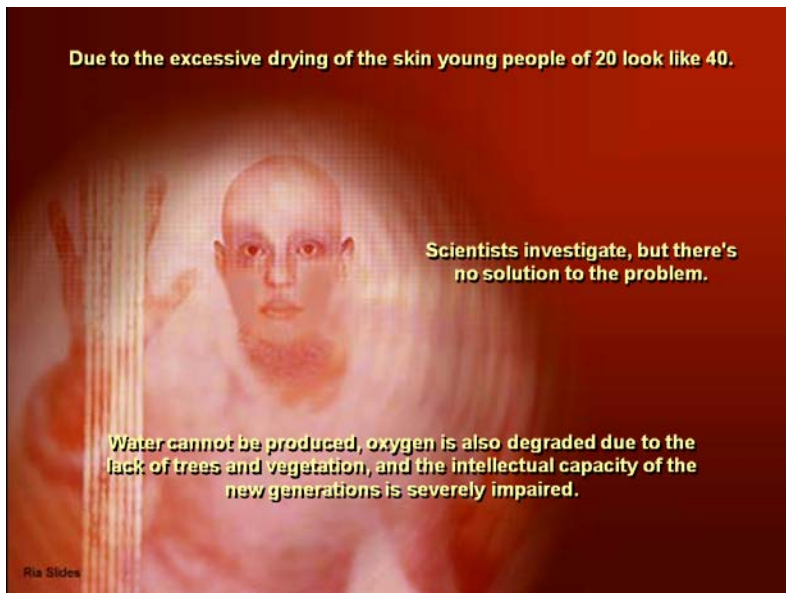


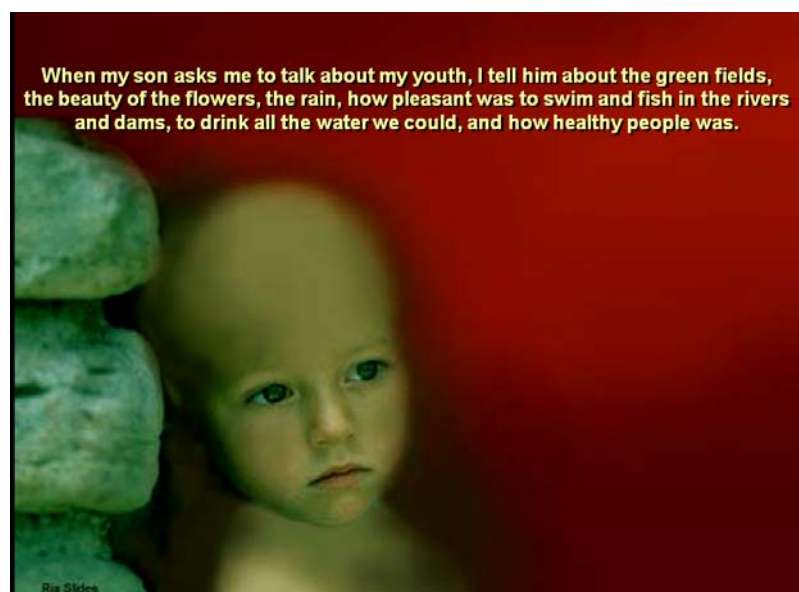
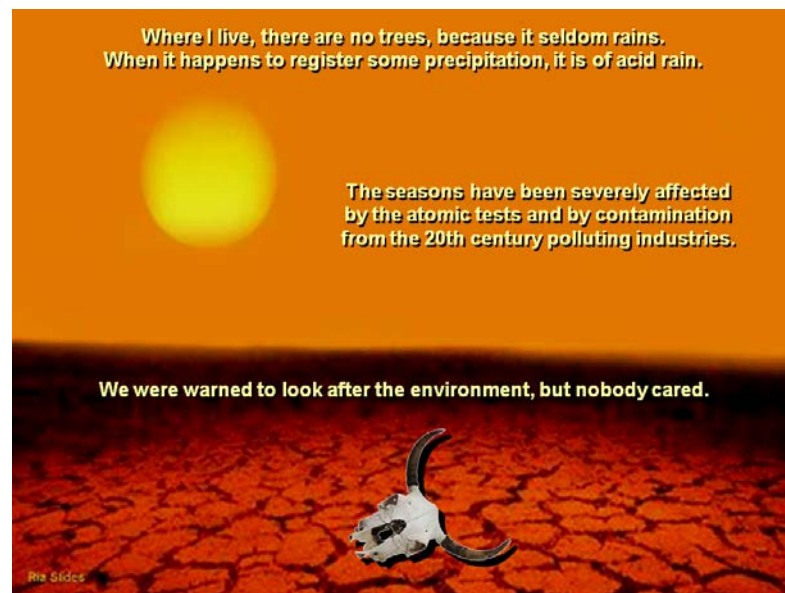
- Purpose of serving
- Use of dry tea leaves again and again for whole day. (Using dry tea leaves again and again changes chemical composition of tea which harm to human body). Tannin of tea will be converted into tannic acid while it's used again and again for brewing tea.

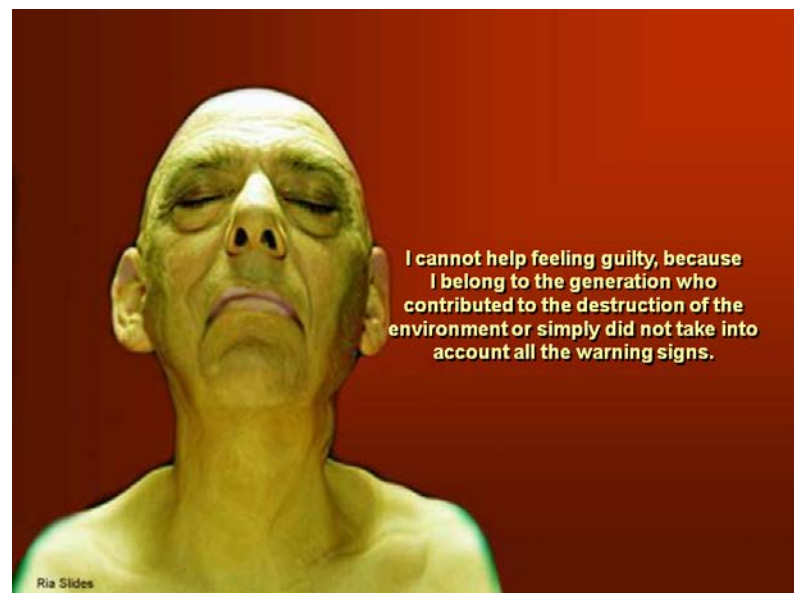


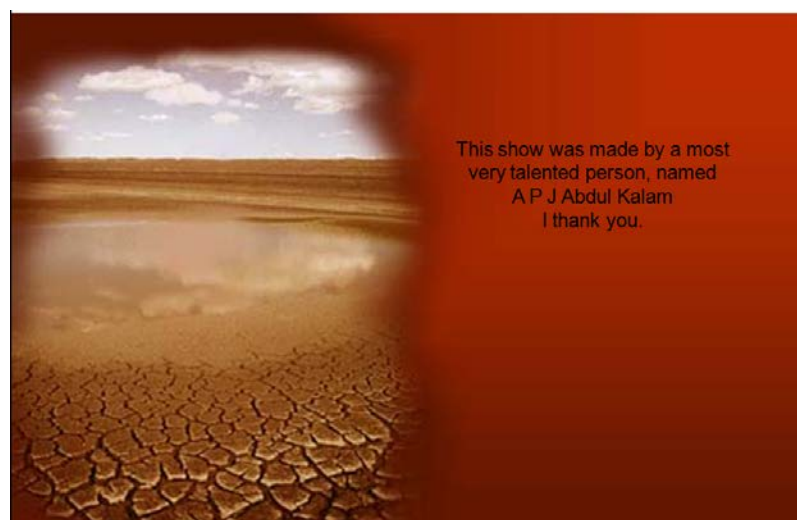
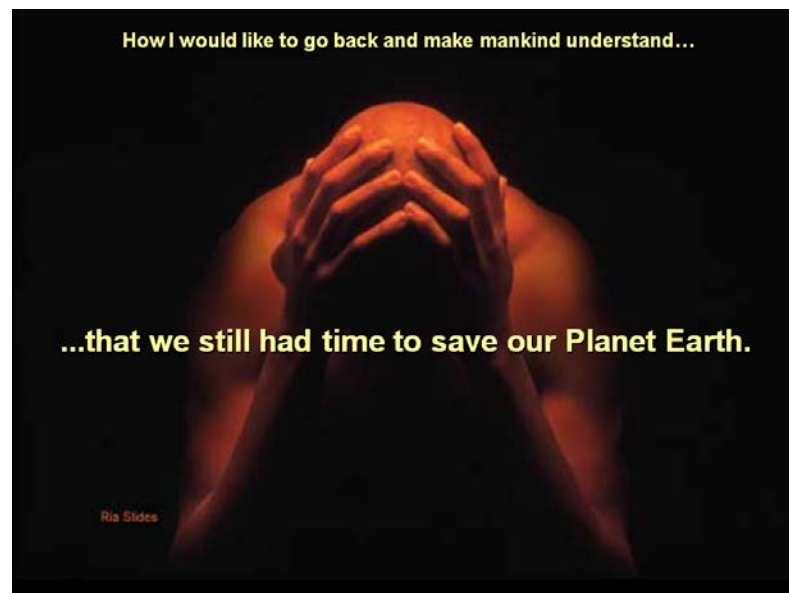
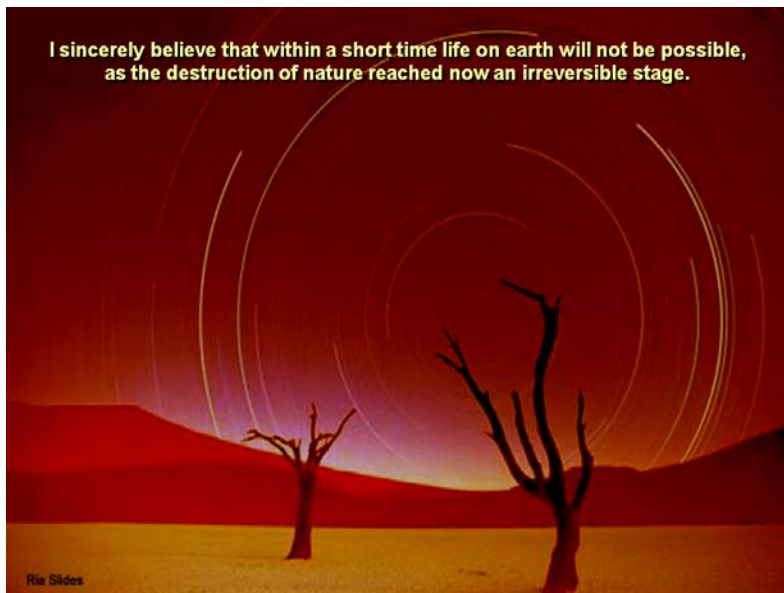












Dear friends,

As part of my Ph. D Research work, I have constructed a tool Knowledge and Skills Checkup to measure Knowledge and skills. For this purpose, I request your kind cooperation. I assure you that the data collected will be kept confidential and used for research purpose only.

Thanking You,

Yours truly,

Meghavi H. Bhatia

Instructions

Kindly provide the following information.

1. Write your personal information in the space provided on bottom of this page.
2. There are several questions for checking knowledge and skills.
3. Read the instructions given inside carefully and follow them.

Name: _____

Roll No. _____

Age: _____

Educational Qualification: _____

Methods of Teaching: _____ **and** _____

Work Experience as teacher: _____ **Years** _____ **Months**

Knowledge and Skill Check up

Each item has up to four alternative responses **a. b. c. d.** please encircle your response letter.

- 1. Cognitive Education focuses on mental phenomena**
 - a. Logical**
 - b. Linguistic, Neurological**
 - c. Perceptual**
 - d. All of the above**

- 2. Psychomotor Education focuses on**
 - a. Playing with object**
 - b. Human movement**
 - c. Continuum ranging**
 - d. a and b**

- 3. Affective Education focuses on**
 - a. Feelings**
 - b. Values**
 - c. Both (a) and (b)**
 - d. None of the above**

- 4. Spiritual Education Focuses on**
 - a. Spirit**
 - b. Moksha**
 - c. Salvation**
 - d. All of the above**

- 5. Wholistic Education focuses on**
 - i. Deep understanding**
 - ii. Critical thinking and Creative thinking**
 - iii. Social relationship**
 - iv. Realising the fullness of human existence**
 - a. i, ii, iii, iv**
 - b. i, ii, iv**
 - c. only iv**
 - d. i and ii**

6. Wholistic Education develops person's potential in

- i.** Intellectual
 - ii.** Emotional
 - iii.** Social
 - iv.** Physical
 - v.** Spiritual
 - vi.** Surrounding Environment
- a.** i, ii, iv
 - b.** i, ii, v, vi
 - c.** ii, iii, vi
 - d.** i, ii, iii, iv, v, vi

7. Define Spiritual Education in your words.

8. Give Mahatma Gandhi's view on wholistic Education.

9. What do you mean by all round development of a child?

10. Which Spiritual qualities should be inculcated in a child?

11. Match the following

Cognitive Domain	Verb
1. Knowledge	1. To organize
2. Comprehension	2. To modify
3. Application	3. To recognize
4. Analysis	4. To judge
5. Synthesis	5. To illustrate
6. Evaluation	6. To distinguish

12. Match the following

Affective Domain	Verb
1. Receive	1. To specify
2. Respond	2. To compare
3. Value	3. To approve
4. Organise	4. To accept
5. Internalise	5. To recall
	6. To revise

Four components have been given, in below questions. Out of which three are alike in some manner and the one is different. Choose the odd one and give reason for it.(For question 13 to 23)

13. Component of wholistic education

- a. Independence
- b. Enlightened
- c. Self -governance
- d. Individual learning in different way

Reason: _____

14. Component of wholistic education

- a. Self -actualization
- b. Social skills
- c. Development of character
- d. Freedom

Reason: _____

15. Verbs of Affective domain

- a. To assist
- b. To protact
- c. To debate
- d. To avoid

Reason: _____

16. Verb of Affective domain

- a. To share
- b. To help
- c. To support
- d. To subsidize

Reason: _____

17. Verb of cognitive domain

- a. To rephrase
- b. To interpret
- c. To acquire
- d. To predict

Reason: _____

18. Component of spiritual development

- a. Compassion
- b. Coexistence
- c. Commitment
- d. Communication

Reason: _____

19. Component of spiritual Qualities

- a.** Honesty
- b.** Morality
- c.** Discipline
- d.** Trust

Reason: _____

20. Qualities of character

- a.** Educated
- b.** Learned
- c.** Puerile
- d.** Scholarly

Reason: _____

21. Qualities of character

- a.** Rational
- b.** Charming
- c.** Sensible
- d.** Competent

Reason: _____

22. Qualities of character

- a.** Provincial
- b.** Cooperative
- c.** Supportive
- d.** Hospitable

Reason: _____

23. Qualities of character

- a.** Loyal
- b.** Helpful
- c.** Vile
- d.** Polite

Reason: _____

- 24.** Prepare instructional objectives on the topic 'Air Pollution' keeping in mind
Wholistic development of students.

25. List down skills required for teacher to teach through Wholistic Approach.

Name: _____ Roll No. _____

Read the story carefully and write the moral of the story along with the spiritual attributes.

Once upon a time several men were passing a small but turbulent river. There was no bridge on that river. People had determined their path by their own experience. People carefully crossed the river by approximately determined path way. Everyone knew that after walking a few steps there were deep pit and vortex on both sides of river. But there was no bridge so what could they do?

One day one old man was crossing the river with others. Due to weakness and low eyesight with high difficulty he crossed the river. Behind him there was a lady crossing the river with her kids. He was observing that the lady was facing difficulty to cross the river with her small kids. He felt mercy on this lady. Old man was carpenter by profession. After reaching on bank immediately he opened his bag and took out his instruments. He collected bamboos and wild climbers and started procedure to make bridge. People stopped and watched this old man, what he was doing. One man asked the carpenter, “Old man what are you doing? Making bridge!” Old man was very much engaged in his work. So without looking at that man he nodded his head in yes. ‘Old man! Are you staying around here?’ Another man asked. Old man said ‘no’. ‘Then you have to cross this river every day, isn’t it?’ People wondered, if he is not staying around then why he is building bridge?


Old man cut bamboos equally and tied them strongly. Now, questioner wondered if the old man has no self-interest then why he is building bridge? Man could stop himself and asked old man “why are you taking pain! For whom are you building this bridge?”

Now old man stopped his work and without speaking pointed towards other kids who were crossing the river with high difficulty. After this again engrossed in his work!

Moral of the story

[illegible]

Spiritual attributes of the story

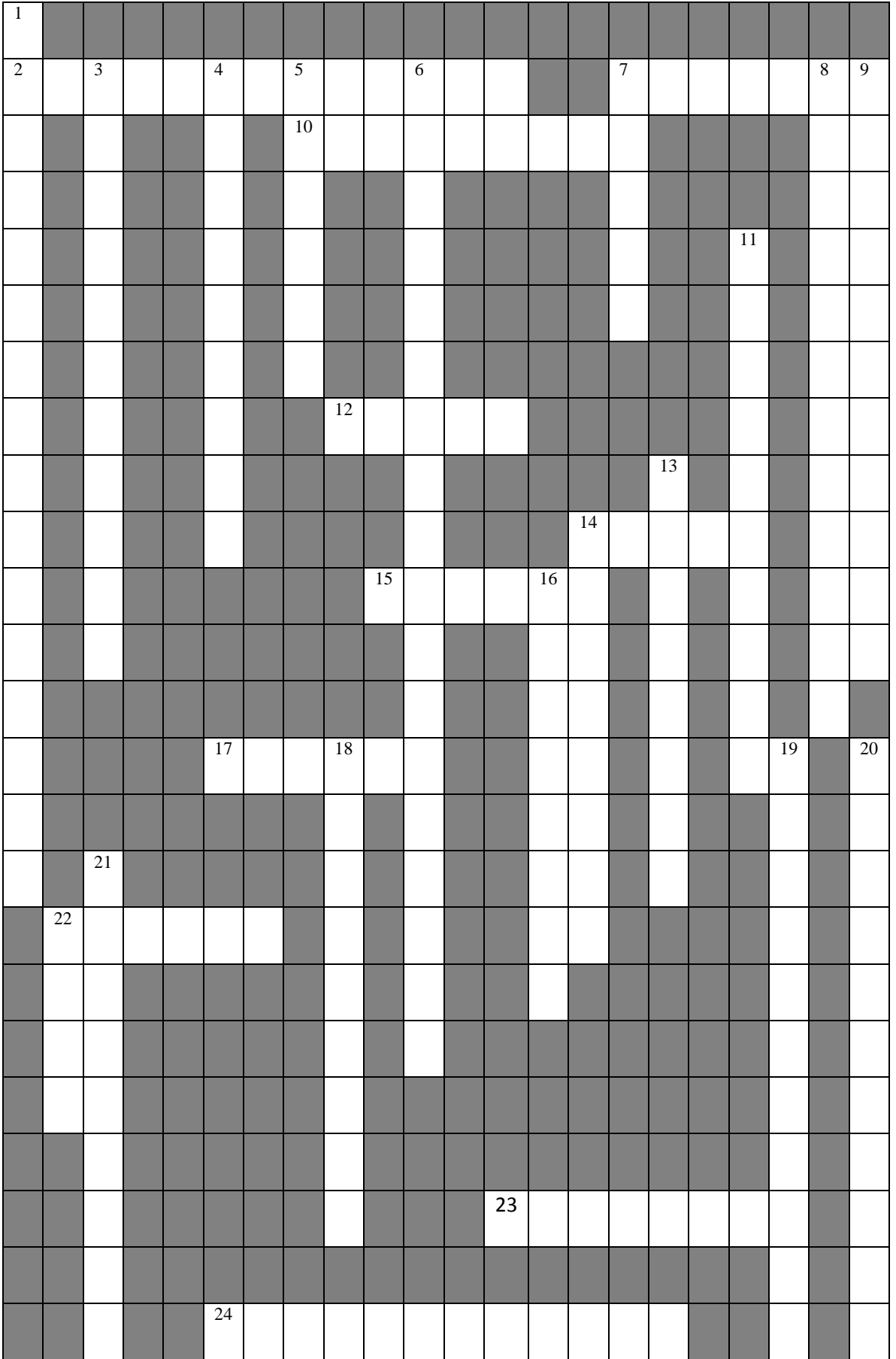
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- A vertical stack of 12 horizontal lines for writing, each preceded by a black dot.

Complete the crossword Puzzle with the help of Down and Across**Down**

1. Wholistic Approach emphasis on realizing the fullness of _____ (16)
3. Wholistic Approach focuses on the all round _____ of child as whole (11)
4. Having the nature of spirit, which is not tangible or material (9)
5. Wholistic Approach concentrate on _____ learning for self-development (6)
6. Wholistic Education focuses on understanding of relationship (18)
7. A spiritual quality, freedom from noise or anxiety, tranquility (5)
8. A person having a highly developed ability to think logically and understand things (12)
9. A Affective Attribute, live together in a peaceful or harmonious way in society (11)
11. A spiritual quality, sympathetic pity and concern for the sufferings of other (10)
13. _____ thinking is which express or involve an assessment of a literary or artistic work (8)
14. Relating to things that can be seen or touched which involve bodily contact or activity (8)
16. A person's ideas, opinions, thought or rational judgment (8)
18. Development of _____ domain relating to moods, feelings and attitudes (9)
19. The surroundings or conditions in which a person lives, operates and develops (11)
20. Related to mind or psychology and muscular movement (11)
21. Associated with a person's emotion (9)
22. Relating to or directed towards oneself or itself (4)

Across

2. Wholistic Approach focuses on deep _____ rather than rote memorization (13)
7. Relating to abilities or phenomena that cannot be explained by natural laws, especially those involving telepathy (7)
10. Development of _____ domain relating to the process of obtaining knowledge through thought, experience and the senses (9)
12. Principles of wholistic approach is understanding of _____ (5)
14. Wholistic Education is not merely study of _____ (5)
15. A person's mental or physical condition (6)
17. A spiritual quality, kind or considerate towards people or animal (6)
22. Wholistic Approach has significance in _____ relationships for development of society (6)
23. _____ thinking is involving the use of person's imagination or original ideas in order to create or to invent something (8)
24. Wholistic approach tries to find out _____ between life like situation (12)



OBSERVATION SCHEDULE FOR LESSON IMPLEMENTED BY STUDENT-TEACHERS

Name of the Student-Teacher _____

Roll No. _____

Topic _____ Date ____/____/____

Class _____

Name of the School _____ Time ____:____

Period No. _____

1. Enunciation of objectives

- **General Objectives**

Level of enunciation of objectives wholistically, that is, integrating all the Domains of Knowledge & Faculties of Human Beings.

- **Instructional Objectives**

Cognitive	Knowledge	Understanding	Analysis	Application	Synthesis	Evaluation
Affective	Receiving	Responding	Valuing	Value Organization	Characterization by a value complex	
Psychomotor	Impulsion	Imitation	Manipulation	Precision	Articulation	Naturalization
Spiritual	Wholistic Perception	Full Immersion	Interrelation	Emerging Action	Universal Development	
Health & Environment	Awareness of Healthy Self & Environment	Understanding of Wholistic Health	Functional Analysis	Observing Sound Health	Health Development	

Instructional Approach

CognitiveComponent	Rating				
	1	2	3	4	5
Relevance					
Adequacy					
Logical continuity					
Psychological organization					
Suitability					
Domain					

Affective Component	Rating				
	1	2	3	4	5
Awareness					
Attention					
Interest					
Valuing					
Value Organization					
Characterization by value complex					

Psychomotor Domain	Rating				
	1	2	3	4	5
Precision					
Ease					
Precaution					
persistence					
Speed					
Scale					

Spiritual Domain	Rating				
	1	2	3	4	5
Wholistic Perception					
Immersion					
Interrelation					
Emerging Action					
Universal Becoming					

Health & Environment	Rating				
	1	2	3	4	5
Health Awareness					
Healthy Relation Between Self & Nature					
Contribution to Healthy Self					
Contribution to Healthy Environment					
Realizing Health Entrainment Ratio					

Wholistic Flow	Rating				
	1	2	3	4	5
Spring of Ideas					
Flow of Feelings					
Expression of Skills					
Spiritual Control					
Relation With the Nature					
Wholistic Becoming					

Dear friends,

As part of my Ph. D Research work, I have constructed an Interview Schedule to know your views on Wholistic Approach. For this purpose, I request your kind cooperation. I assure you that the data collected will be kept confidential and used for research purpose only.

Thanking You,

Yours truly,

Meghavi H. Bhatia

Instructions

Kindly provide the following information.

1. Write your personal information in the space provided on bottom of this page.
2. There are several questions to know your views on Wholistic Approach.

Name:

Roll No.

Mobile No.:

E-mail ID:

Interview Schedule

1. **What are the efforts done by you to meet Wholistic Education through Wholistic Approach?**

2. **Do you think infrastructure of the school hinders in implementation of the Wholistic Approach?**

3. Do you face any problem regarding Time-Space-Personnel-Material Management while implementing Wholistic Approach of Science Teaching in the school?

[illegible]

4. Describe a River or Sea Wholistically.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Dear friends,

To study the reactions of the student-teachers on the given intervention programme through Wholistic Approach

I request you to kindly co-operate and fill the given reaction scale.

Thanking You,

Yours truly,

Meghavi H. Bhatia

Give Your Information

Name: _____ Roll No. _____

Instruction

Read statements carefully. Against every statement there are five columns (Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree) tick “√” as per the effectiveness of the programme.

Sr. No.	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	The lessons were well designed by the teacher.					
2.	Choice of content matter was appropriate.					
3.	The teacher explained the various concepts well.					
4.	There was logical sequence in the presentation.					
5.	The number of points covered was adequate as per the lesson time.					
6.	Teaching points were well interconnected.					
7.	Teaching points were well presented.					
8.	The demonstrations given by the teacher were effective.					
9.	The experiments done by us are satisfying.					
10.	The questions asked by the teacher were distributed across various domains.					
11.	The responses given by us were well treated by the teacher.					

12.	I could formulate the principles governing the various scientific phenomena.					
13.	The wholistic approach of teaching science was meaningful.					
14.	The wholistic approach of learning science was joyful.					
15.	The wholistic approach could interweave the cognitive- Affective- Psychomotor- Health- Environment and Spiritual Domains.					
16.	The wholistic approach of teaching science helped me to inter-relate the concepts wholistically.					
17.	I feel confident in employing wholistic approach for teaching Science.					
18.	I would like to suggest this wholistic approach of teaching science to other colleagues.					
19.	I have learnt to view the reality wholistically.					
20.	I have got a feeling that all the phenomena of the cosmos are inter-related.					
21.	I find it difficult to employ wholistic approach of teaching Science.					
22.	I find it time consuming to design lesson plan through wholistic approach for Teaching science.					
23.	It takes more efforts to design lesson plan through wholistic approach for teaching Science.					
24.	I feel that infrastructure of school hinders in implementation of lessons designed through wholistic approach for teaching Science.					
25.	I find it difficult to manage class while implementing lessons designed through wholistic approach for teaching Science.					
26.	I find it difficult to evaluate student performance while implementing lessons designed through wholistic approach for teaching Science.					