

Experiential Learning Plan(ELP) - Science

TOPIC	Interchange of states of water
SUB-TOPIC	Cooling effects of evaporation
DURATION	35 minutes

CURRICULAR GOALS	CG :1 Explores the world of matter and its constituents, properties and behaviour
COMPETENCIES AS PER NCF/NIPUN BHARAT	C-1.4 Observes and explains the phenomena caused due to differences in temperature
SDG(Sustainable Development Goals)	SDG 4 - Quality Education

Strategies As Per NEP	Experiential Learning - Activity
Visual Thinking Routines	KWL Chart

Technology aids	PPT: ELP_Cooling effect of evaporation.pptx
Assessment (As, For, Of)	AFL Assessment for learning - Reflection questions AOL Assessment of learning - Application questions
Interdisciplinary Connections	NA
Cross-Cutting Themes	Technology aids

Brief Description:

*This Experiential learning plan on the topic '**Interchange of States of Water**' is presented using '**Hands on activity**'.*

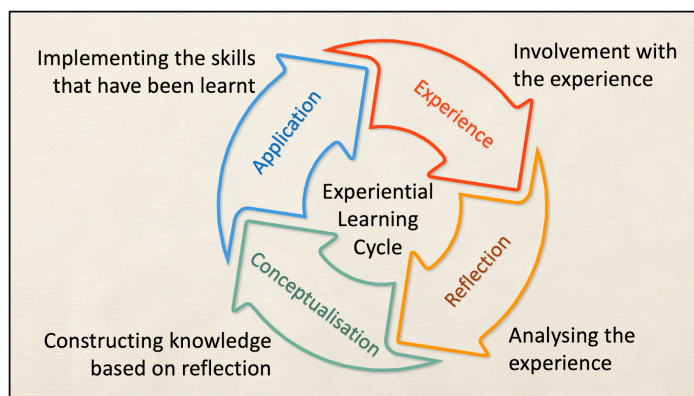
The module integrates, Inquisitive Questions(IQ), Day to Day Relevance(DD), Assessment Questions (QA) with Suggested Activity (SA)

Cross-cutting themes of 'Technology Aid' is provided as per NCF recommendation.

Specific Learning Outcomes

Students will be able to

- 1. The students will be able to record the initial and final temperature readings.**
[Fulfil C 1.4]
- 2. The students will be able to analyse the temperature readings.**
[Fulfil C1.4]]
- 3. The students will be able to explain the phenomenon of cooling during evaporation**
[Fulfil C1.4]



Note to teacher: The table below highlights the tasks for each stage of the experiential learning cycle. The details and explanation of the content, wherever required, will be available as '**Note**' after this section. The same can also be accessed by clicking on '**Refer Note**' wherever mentioned in the table below.

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Stages	Description of task	Teacher tasks	Student tasks	Time (Mins)
Experience	Class starter: KWL Chart on the Topic-Evaporation. To know about KWL Chart - refer to Note E1.1 Demonstration of an activity- Refer to Note E 1.2	a. Use the PPT 'ELP_Cooling effect of evaporation_ pptx.' b. Ask students to draw the KWL chart in their notebooks. c. Ask students to write what they already know about the topic evaporation under the heading K - KNOW -Similarly ask students to write what they want to know about evaporation under the column W- WANT d. Demonstrate the Activity. e. Ask students to note down the temperature readings.	a. Fill in the K and W columns of KWL chart b. Observe the experiment and record the temperature	15
Reflection	Students are encouraged to ask questions and discuss observations. Reflection questions 1. What temperature does the thermometer record in the beginning? 2. Compare the initial and final readings of the thermometer. Give reasons for the differences in the readings. 3. What did you notice when the thermometer was brought under the fan?	Tell the students to answer the questions based on their observation in their notebooks. Allow the students to write on their own.	Clarify doubts through questioning in the class so that everybody participates. Write answers to the given questions in the notebooks.	10

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Conceptualisation	Discussion on the responses to the reflection questions. Refer to Note C 1.1 (Answers to the reflection questions) For more clarity an image based discussion on exchange of heat energy during change of states. Refer to slide 8 of ELP_Cooling effect of evaporation.pptx	Ask the students to present their responses to the reflection questions. Write students' inputs on the blackboard. Present slide no. 8 and ask students to copy the diagram in the notebook. Have an interactive discussion on exchange of heat energy during change of states.	Present responses to the reflection questions. Listen carefully to the explanation given by the teacher to the inputs. Copy the diagram from the slide. Participate in the image based discussion.	5

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Application	a.Try out this Activity now. Wet one hand with the water from their water bottles and stretch both hands towards the fan (in summer) or swing their hands in the air. b.Observe the difference in temperature in both hands c.Explain with reason, the cooling effect. d. Mention two other ways through which you can dry your hands. Which way will be faster and Why? Probing Question: In hot weather, we feel hot as heat energy is entering our body. Can the same explanation apply here when our wet hand is feeling cold? Explain. Completion of KWL Chart Refer NoteE1.1	Give instructions for the activity and present the questions in the PPT Discuss the answers after the students have written. Ask students to record what they have learnt, in the L column of the KWL Chart. Ask them to go through column W, and find out whether they have achieved what they wanted to know. Ask them to check Column K so they can identify any misconceptions they may have had before beginning the unit.	Perform the activity as instructed by the teacher. Write the answers in the notebooks and participate in the discussion. Complete the KWL Chart.	10
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Note E1.1

Details of KWL Chart

Put table here

By using the KWL chart, the teacher can find out the students' prior knowledge about evaporation. It will also help to develop a concept of cooling during evaporation.

Teacher can create a master list of all students' responses.

Sometimes it is appropriate to correct false information at this point in the process. Other times, you might want to leave the misconceptions so that students can correct them on their own as they learn new material.

Note E1.2

Materials Needed:

- A laboratory thermometer
- A small piece of cloth or cotton (big enough to wrap around the thermometer bulb)
- Water
- String or rubber band (optional)
- Fan or open-air environment (optional)

Procedure:

1. Measure the Initial Temperature:
[Note the room temperature by allowing the thermometer to stabilize for a few minutes.]
2. Wrap the Bulb with Wet Cloth:
[Dip the small cloth in water and wring out excess water so it is damp but not dripping. Wrap it around the bulb of the thermometer.
Secure it with a string or rubber band if needed.]
3. Record the temperature
[Wait for 2-3 minutes and note the temperature reading.]
4. To enhance Evaporation :
Speed up evaporation by placing the thermometer in front of a fan or blowing air over it. Note the temperature again.

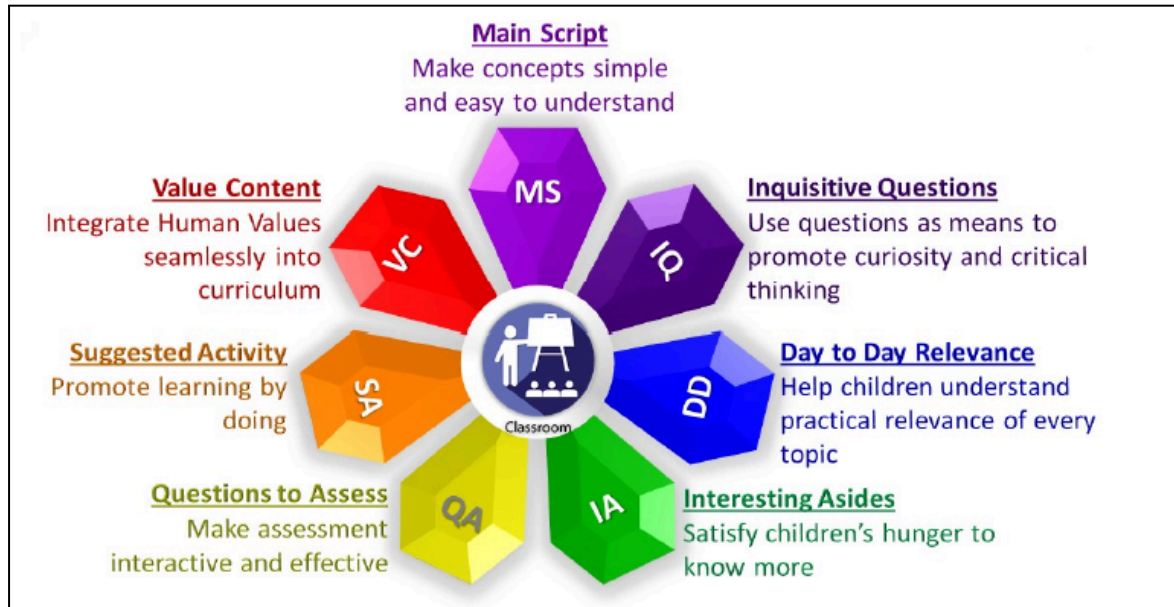
Note C1.1

Possible answers to reflection questions:

- a. [Atmospheric temperature, some value 20 or 30 degrees]
- b. [Evaporation requires heat energy to change water from liquid to vapour state. This heat is absorbed from the surroundings including the thermometer bulb. As a result, the temperature of the thermometer decreases, demonstrating that evaporation causes cooling.]
- c. The temperature reduced further because the rate of evaporation increases with wind speed

Note <<Id No.>>Answers to the Application based questions

7 Assets [Components] of SSSVV



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