**How Acidic Is Our Local Rainwater?**

**Objectives:**

1. Familiarise the children with the term acid rain.
2. Explore what constitutes acid rain.
3. Enable the children to understand the sources of acid rain.
4. Enable the children to understand the effects of acid rain on
   * + Buildings
     + Soil and plants
     + The ocean and sea creatures
     + Health
     + Trees
     + Rivers and lakes

4. Explore the pH scale

5. Identify if certain common household products are acidic, alkaline or neutral

6. Introduce the children to Universal indicators e.g. red cabbage

7. Familiarise the children with how to use to Universal Indicator Paper

8. Provide the children with opportunities to use red and blue litmus paper and to understand how they work.

9. Familiarise the children with what constitutes a fair test.

10. Provide the children with the opportunity to construct their own weather gauge.

11. provide the children with opportunities to use Scratch to demonstrate what they have learned.

13. Enable the children to use Microsoft Excel to represent their findings

14. Provide the children with opportunities to demonstrate what they have learned through creating and presenting PowerPoint presentations.

15.Enable the children to create an animation on acid rain and its effects.

**Step One: What is Acid Rain?**

Enable the children to build an interesting fact file on what constitutes acid rain.

**Step Two: Sources of Acid Rain.**

Discuss with the children the various sources of acid rain. Familiarise the children with the various gases that cause acid rain and explore how these gases are produced and then released into the atmosphere. Provide the children with opportunities to explore how we might reduce acid rain.

**Step Three: The Effects Of Acid Rain.**

Explore in some detail with the children the effects acid rain has on the following

* buildings
* soil and plants
* the ocean and sea creatures
* our health
* forests and trees
* rivers and lakes

Design a range of practical classroom experiments to explore the impact of acid rain on plants and sea creatures.

**Experiment One:**

Using three similar plants water one, use lemon juice in the second and vinegar in the third.

Ensure the same amount of liquid is used in each plant.

Monitor and record the findings over a four week period.

**Experiment Two:**

Using two similar sea shells.

Place the first shell in sea water

Place the second shell in vinegar

Ensure the same amount of liquid is use to store each shell

Monitor and record the findings over a four week period.

**Step Four: The pH Scale.**

Introduce the children to the terms ***acid, base and neutral***. Explore household items that are acidic, basic or neutral. Explore how ted cabbage acts as a universal indicator.

Introduce the children to ***red and blue litmus paper*** and allow them time to discover how they work.

Introduce the children *to* ***universal indicator paper*** and again give them time to explore how colours change depending on the pH value.

**Step Four: Design and Build a Rain Gauge.**

Provide each child with an opportunity to design and then build a rain gauge.

Encourage the children to place their rain gauge in a suitable location in their garden.

**Step Five: Collecting Data on Acid Rain**

Decide on a suitable weekly time and day to test the rain water collected.

Design a suitable table to record findings.

Provide the children with an adequate supply of Universal Indicator paper.

Encourage the children to test the rain water collected on a weekly basis (on the day/time agreed by the class)

Discuss findings in class on a weekly basis.

**Step Six: Presenting Data Findings**

Introduce the children to Microsoft Excel

After two months collecting data on how acidic their local rain water is - provide the children with the opportunity to represent their findings in graph format using excel.

**Step Seven: Explore findings**

Explore in details the findings the children have come to. In particular explore similarities and differences discovered. Determine if this was a fair test and try to ascertain if any changes may need to be made.

**Step Eight: Draw Conclusions.**

Based on the above discussion enable the children to draw conclusions on how acidic their local rain water is. Compare their findings with findings in the partner schools.

**Step Nine: Consolidation of learning.**

Encourage the children to design ***Microsoft PowerPoint*** presentations to demonstrate what they have learned about acid rain.

Provide the children with opportunities to use ***Scratch*** to demonstrate aspects of what they have learned about acid rain.

Provide the children with the opportunity to build an ***animation*** on acid rain. Integrate with art lessons so that the necessary background sets and props are designed and made.

**Step Ten: Presentation of work.**

Provide the children with the opportunity to present their project at school assembly and at local and national science fairs.