

CALCH LESSON PLAN

Subject	Unit	Lesson	Key stage
Science	1	Acids and alkalis	KS2/3
Learning objectives: By the end of this lesson pupils should learn: <ul style="list-style-type: none">• Some pupils will understand the neutralising effect of adding alkaline quicklime to acidic soil.• Most pupils should learn the difference between acids and alkalis• All pupils should be able to identify colour change when using universal indicator paper and litmus solution and compare with the pH scale			
Keywords: Limestone, acid, alkali, neutralisation, pH Scale.			

<p>Introduction: The first lesson is an introduction to acids and alkalis. After a brainstorming session to evaluate pupils prior knowledge of acids and alkalis, pupils will be provided with labels from household materials and asked to find names of acids or alkalis contained in them.</p>	<p>Timings (Based on 60 min) 5 mins</p>
<p>Main: Pupils could be shown a selection of household acids and alkalis i.e. vinegar, fruit juice, bicarbonate soda etc... And asked to describe appearance and smell (acids – bitter, alkalis – soapy)</p> <p>Discuss acids and alkalis used in the laboratory and relevant hazard symbols/Hazcards. Discuss safety aspects of handling acids and alkalis (wearing goggles, holding bottle of chemical from the neck) and ask pupils how they could make them less hazardous i.e. dilute with water.</p> <p>Introduce pupils to universal indicator paper and explain its use to tell whether chemicals are acid or alkali. Pupils may check a number of household substances in pairs to discover whether or not they are acid or alkali. Pupils should write their observations onto recording sheet.</p> <p>Neutralisation - An acid and alkali will neutralise each other (if the correct amounts are used)</p> <ol style="list-style-type: none"> 1. Hydrochloric acid is used in the stomach to help _____. If we eat too many “rich” foods our stomachs create too much ____ – this is called _____. This acid needs to be neutralised by taking indigestion tablets. 2. Soil is naturally acidic, mainly due to acid _____. This can have bad effects on _____ and vegetable growth, so the excess acid may need to be neutralised with an _____ or suitable fertiliser. <p>Key words to fill in the blanks: <i>plant, digestion, indigestion, alkali, rain, acid</i></p> <p>As extension work pupils can write keywords and meanings in their workbooks. For a longer term extension work please see attached ‘The chicken or the egg’ worksheet. Please note this experiment can take between four and six weeks.</p> <p>Pupils are to understand and learn:</p> <ul style="list-style-type: none"> • That many household materials are acids and alkalis, some are dangerous, and others are less hazardous. • The acids and alkalis used in the laboratory • to recognise and interpret common hazard symbols • An acid and alkali (used in the correct quantities) will neutralise each other • Understand keywords such as; acid, alkali, neutralisation. 	<p>20 -30 mins</p> <p>10 mins</p> <p>10 mins</p>
<p>Plenary: Recap on the pH scale, show a number of products and ask if pupils can guess whether they are acid or alkali and why they have made their choice. Relate back to the Black Mountain quarries and think about why the limestone found there was so important that it was worth working in such a harsh environment.</p>	<p>5 mins</p>

Differentiation:

ALN pupils may need extra help when examining household items on pH scale and making note of their observations. Worksheet is included for the 'filling in the blanks' activity.

As an extension task pupils can answer the question. 'Why did farmers need limestone?'

Assessment:

Assessment through Q & A during the lesson and during plenary. Through marking observation sheets and 'fill in the blanks' writing frame.

Resources:

PowerPoint presentation, Fill in the blanks writing frame, observation worksheet, Acids and alkalis information sheet, pH scale.

Other resources/equipment: Litmus solution, universal indicator paper, a range of household items (All to be used under supervision especially cleaning solutions) pots to test products, paper towels.

Links to literacy/numeracy:

Literacy - This lesson can link to literacy in the following ways:

- *Pupils are asked to speak clearly using appropriate language*
- *Listen and respond to others.*
- *Gather and organise information from various sources.*
- *Expand upon ideas with supporting reasons.*
- *Fill in blanks using appropriate words.*