

## OPAL Wales Curriculum Links for Key Stage 2 for Numeracy and Science



The Bug Survey	Numeracy Skills	Science Skills
<p>Suitable for pupils from the Summer term of Year 2 and above.</p> <p>Pupils look for bugs in one or more areas of the school grounds for 15mins. They can put their findings on the website; <b>www.opalexplornature.org</b></p> <p>Teachers can compare their own data with one on the website or carry out two surveys in contrasting areas of the school grounds</p>	<p>The fieldwork of the Bug Survey can be used to practice the following skills;</p> <p><b>Developing numerical reasoning.</b> From Year 3;</p> <p><b>Represent and Communicate;</b> Select and construct appropriate charts, diagrams and graphs with suitable scales.</p> <p><b>Review;</b> draw conclusions from data and recognise that some of the data may be misleading or uncertain</p> <p><b>Using data skills</b> Collect and record data – tally charts, tables and diagrams and frequency tables. From Year 5; Bar charts, use mean, median and mode to describe a data set.</p>	<p><b>Skills</b></p> <p><b>Represent and Communicate</b> Pupils can use the Bug survey to communicate their findings clearly in speech, writing, drawings, diagrams, charts, tables, bar charts, and using relevant scientific vocabulary.</p> <p><b>Enquiry</b> Pupils can use the Bug survey to carry out a scientific enquiry. They can compare two contrasting areas in the school grounds, outlining a planned approach, making a prediction using previous knowledge, carrying out a fair test, controlling the variables that need to be kept the same.</p> <p><b>Developing</b> Pupils can make observations and measurements when doing the bug survey and using the equipment and techniques safely. They can check observations by repeating them in order to collect more reliable data. They can make comparisons and identify and describe trends or patterns in their data and use the data on the <b>opalexplornature.org</b> web site to extend this. Finally they can consider different interpretations of the data, giving reasons, and form considered opinions and make decisions about improving the school grounds for wildlife as a result.</p> <p><b>Reflecting</b> Pupils can use the bug survey to think about what they have done, beginning to evaluate outcomes, deciding whether the approach was successful and suggesting any improvements to the results. They can link their learning to similar situations using the data in the <b>www.opalexplornature.org</b> website.</p> <p><b>Range</b> <b>Interdependence of organisms, especially point 4.</b> Through the Bug survey pupils can carry out field work to discover the plants and animals found in two contrasting environments</p>

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The Water Survey	Numeracy Skills	Science Skills
<p><b>From Year 4 and above</b> Pupils find and identify aquatic invertebrate (pond skaters, snails, dragonfly nymphs) and use their presence to determine the quality of the water. They can use pH paper to test how acid the water is.</p>	<p>The fieldwork of the Water Survey can be used to practice the following skills:  <b>Developing numerical reasoning.</b>  <b>Identify processes and connections</b>  <b>From Year 3</b>                      Transfer mathematical skills to a variety of contexts                      Identify appropriate steps and information to complete the task.  <b>Represent and Communicate;</b>  <b>From Year 3</b>                      Select and construct appropriate charts, diagrams and graphs with suitable scales.  <b>Review;</b> draw conclusions from data and recognise that some of the data may be misleading or uncertain  <b>Using data skills</b>  <b>Collect and record data</b> – tally charts, tables and diagrams and frequency tables. From Year 5; Bar charts, use mean, median and mode to describe a data set.</p>	<p><b>Skills</b>  <b>Represent and Communicate</b>                      Pupils can use the Water survey to communicate their findings clearly in speech, writing, drawings, diagrams, charts, tables, bar charts, and using relevant scientific vocabulary.  <b>Enquiry</b>                      Pupils can use the Water survey to carry out a scientific enquiry. They can compare two different ponds, outlining a planned approach, making a prediction using previous knowledge, carrying out a fair test controlling the variables that need to be kept the same.  <b>Developing</b>                      Pupils can make observations and measurements when doing the water survey and using the equipment and techniques safely.                      They can check observations by repeating them in order to collect more reliable data.                      They can make comparisons and identify and describe trends or patterns in their data and use the data on the <a href="http://opalexplornature.org">opalexplornature.org</a> web site to extend this. Finally they can consider different interpretations of the data, giving reasons, and form considered opinions and making decisions about improving ponds for wildlife as a result.  <b>Reflecting</b>                      Pupils can use the pond survey to think about what they have done, beginning to evaluate outcomes, deciding whether the approach was successful and suggesting any improvements to the results. They can link their learning to similar situations using the data in the <a href="http://opalexplornature.org">opalexplornature.org website</a>.  <b>Range</b>  <b>Interdependence of organisms, especially point 4 &amp; 6</b>                      Through the pond survey pupils can carry out field work to discover the plants and animals found in two contrasting environments.                      Pupils can use the pond survey to learn about the environmental factors that affect what grows and lives in two environments – for example pH and light levels (using the Opalometer). This equipment is provided in the packs.</p>

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The Tree Health Survey	Numeracy Skills	Science Skills
<p><b>Suitable from Year 4 and above</b> Pupils compare several trees, measuring their height, girth, and using % to estimate the health of their leaves. They then look for specific pest species. This data can then be compared using charts.</p>	<p>The fieldwork of the Tree Health Survey can be used to practice the following skills;  <b><u>Developing numerical reasoning</u></b>  <b>Identify processes and connections</b>                      Estimate and visualise size when measuring and use the correct units.  <b>Represent and Communicate;</b> Select and construct appropriate charts, diagrams and graphs with suitable scales.  <b>Review;</b> draw conclusions from data and recognise that some of the data may be misleading or uncertain  <b><u>Using number skills</u></b>  <b>Use number facts and relationships</b>                      From Year 6; multiply and divide numbers and decimals by 10 and 100  <b><u>Using measuring skills</u></b>                      Year 4; Length, measure on a ruler to the nearest mm and record using a mix of units.                      Year 6; read and interpret scales or divisions on a range of measuring instruments. Equipment is provided in the packs for this.</p>	<p><b><u>Range</u></b>  <b>Interdependence of organisms, especially point 4 &amp; 6</b>                      Pupils can use the Tree health survey to learn about the environmental factors that affect what grows and lives in two environments.</p>

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The Biodiversity Survey	Numeracy Skills	Science Skills
<p><b>From Year 3 and above</b> Pupil survey a length of hedge for bugs. The record everything they find, working in 3m sections. They can go onto to compare two different hedges in the school grounds or compare their results with those on the website.</p>	<p>The fieldwork of the Biodiversity Survey can be used to practice the following skills:  <b><u>Developing numerical reasoning.</u></b>                      From Year 3;  <b>Represent and Communicate;</b> Select and construct appropriate charts, diagrams and graphs with suitable scales.  <b>Review;</b> draw conclusions from data and recognise that some of the data may be misleading or uncertain  <b><u>Using number skills</u></b>  <b>Use number facts and relationships</b>                      Compare and estimate with numbers up to 1,000  <b><u>Using measuring skills</u></b>                      Year 4; Length, measure on a ruler to the nearest mm and record using a mix of units.  <b><u>Using data skills</u></b>  <b>Collect and record data</b> – tally charts, tables and diagrams and frequency tables. From Year 5; Bar charts, use mean, median and mode to describe a data set.</p>	<p><b><u>Science Skills</u></b>  <b>Represent and Communicate</b>                      Pupils can use the Biodiversity survey to communicate their findings clearly in speech, writing, drawings, diagrams, charts, tables, bar charts, and using relevant scientific vocabulary.  <b>Enquiry</b>                      Pupils can use the Biodiversity survey to carry out a scientific enquiry. They can compare two contrasting hedges in the school grounds, outlining a planned approach, making a prediction using previous knowledge, carrying out a fair test, controlling the variables that need to be kept the same.  <b>Developing</b>                      Pupils can make observations and measurements when doing the bug survey and using the equipment and techniques safely.                      They can check observations by repeating them in order to collect more reliable data. They can make comparisons and identify and describe trends or patterns in their data and use the data on the <b><i>opalexplorenature.org</i></b> web site to extend this.                      Finally they can consider different interpretations of the data, giving reasons, and form considered opinions and make decisions about improving the school grounds for wild-life as a result.  <b>Reflecting</b>                      Pupils can use the Biodiversity survey to think about what they have done, beginning to evaluate outcomes, deciding whether the approach was successful and suggesting any improvements to the results. They can link their learning to similar situations using the data in the <b><i>opalexplorenature.org website</i></b>.  <b><u>Range</u></b>  <b>Interdependence of organisms, especially point 4</b>                      Through the Biodiversity survey pupils can carry out field work to discover the plants and animals found in two contrasting environments.</p>

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The Soil Survey	Numeracy Skills	Science Skills
<p><b>From Year 6 and above</b> The pupils dig a hole 20 cm” and count the number of worms they find in it, identifying them using a key. They use pH paper to test the soil and carry out other simple soil tests. They can carry out the survey in one or more areas to compare the results or compare their results with those on the website.</p>	<p>The fieldwork of the Soil Survey can be used to practice the following skills: <b>Developing numerical reasoning.</b> <b>Represent and Communicate;</b> Select and construct appropriate charts, diagrams and graphs with suitable scales. <b>Review;</b> draw conclusions from data and recognise that some of the data may be misleading or uncertain. <b>Using measuring skills</b> <b>Time</b> From Year 5; Time events in minutes and seconds and order the results. Carry out practical activities involving timed events and explain which unit of time is the most appropriate. <b>Using data skills</b> <b>Collect and record data</b> – tally charts, tables and diagrams and frequency tables. From Year 5; Bar charts, use mean, median and mode to describe a data set.</p>	<p><b>Science Skills</b> <b>Represent and Communicate</b> Pupils can use the soil survey to communicate their findings clearly in speech, writing, drawings, diagrams, charts, tables, bar charts, and using relevant scientific vocabulary. <b>Enquiry</b> Pupils can use the soil survey to carry out a scientific enquiry. They can compare two different areas of the school grounds, outlining a planned approach, making a prediction using previous knowledge, carrying out a fair test, controlling the variables that need to be kept the same. <b>Developing</b> Pupils can make observations and measurements when doing the soil survey and using the equipment and techniques safely. They can check observations by repeating them in order to collect more reliable data. They can make comparisons and identify and describe trends or patterns in their data and use the data on the <a href="http://opalexplorenature.org">opalexplorenature.org</a> web site to extend this. Finally they can consider different interpretations of the data, giving reasons, and form considered opinions and make decisions about improving the school grounds for wildlife as a result. <b>Reflecting</b> Pupils can use the soil survey to think about what they have done, beginning to evaluate outcomes, deciding whether the approach was successful and suggesting any improvements to the results. They can link their learning to similar situations using the data in the <a href="http://opalexplorenature.org">opalexplorenature.org website</a>. <b>Range</b> <b>Interdependence of organisms, especially points 4 &amp; 6</b> Through the soil survey pupils can carry out field work to discover the animals found in two contrasting environments. Pupils can use the soil survey to learn about the environmental factors that affect what grows and lives in two environments – for example pH and soil texture. Equipment is provided in the packs for this.</p>

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The Air Survey	Numeracy Skills	Science Skills
<p>The Tar spot activity on sycamore leaves is suitable for KS2 (see activity 2). Here pupils collect and measure sycamore leaves and then count the number of tar spots on each leaf.</p> <p>The Lichen air survey itself is best used for KS4 and above</p>	<p>The fieldwork of the Air Survey can be used to practice the following skills:</p> <p><b>Developing numerical reasoning.</b>  <b>Identify processes and connections</b>            Transfer mathematical skills to a variety of contexts            Identify appropriate steps and information to complete the task.</p> <p><b>Represent and Communicate;</b>  <b>From Year 3</b>            Select and construct appropriate charts, diagrams and graphs with suitable scales.  <b>Review;</b> draw conclusions from data and recognise that some of the data may be misleading or uncertain</p> <p><b>Using data skills</b>  <b>Collect and record data</b> – tally charts, tables and diagrams and frequency tables.            From Year 5; Bar charts, use mean, median and mode to describe a data set.</p>	<p><b>Represent and Communicate</b>            Pupils can use the Tar spot survey to communicate their findings clearly in speech, writing, drawings, diagrams, charts, tables, bar charts, and using relevant scientific vocabulary.</p> <p><b>Enquiry</b>            Pupils can use the Tar spot survey to carry out a scientific enquiry. They can compare two different areas of the school grounds, outlining a planned approach, making a prediction using previous knowledge, carrying out a fair test, controlling the variables that need to be kept the same.</p> <p><b>Developing</b>            Pupils can make observations and measurements when doing the Tar spot survey and using the equipment and techniques safely. They can check observations by repeating them in order to collect more reliable data. They can make comparisons and identify and describe trends or patterns in their data and use the data on the <b>opalexplornature.org</b> web site to extend this. Finally they can consider different interpretations of the data, giving reasons, and form considered opinions and make decisions as a result.</p> <p><b>Reflecting</b>            Pupils can use the Tar spot survey to think about what they have done, beginning to evaluate outcomes, deciding whether the approach was successful and suggesting any improvements to the results. They can link their learning to data in the <b>opalexplornature.org website</b>.</p>