



OPAL Survey	Numeracy	Science
<p><b>The Bug Survey</b> Pupils look for bugs in one or more areas of the school grounds for 15mins. They can put their findings on the website <a href="http://www.opalexplornature.org">www.opalexplornature.org</a></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 data from the Bug survey can be used to practice the following skills after the data collection in the field.</p> <p><b>Using data skills</b></p> <p><b>Collect and record data</b> Plan how to collect data to test hypotheses. Construct frequency tables for sets of data (Year 7)</p> <p><b>Present and analyse data</b> Construct a wide range of graphs and diagrams to represent the data (Year 7) including pie charts (Year 9). Test hypotheses, making decisions about how best to record and analyse the information from large data sets. (Year 9).</p> <p><b>Interpret results</b> Interpret diagrams and graphs (including pie charts) to compare sets of data. Use mean, median, mode and range to compare two distributions (discrete data) (from Year 7) Select and justify statistics most appropriate to the problem considering extreme values (Year 9)</p>	<p><b>Skills</b></p> <p><b>Communication</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></p> <p><b>Planning</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 <a href="http://www.opalexplornature.org">www.opalexplornature.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.</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 <a href="http://www.opalexplornature.org">www.opalexplornature.org</a> website.</p> <p><b>Range</b></p> <p><b>Interdependence of organisms,</b> Pupils can use the results of the Bug Survey to represent the habitat using a food–web .</p>

# OPAL Wales Curriculum Links for Key Stage 3 for Numeracy and Science. Numeracy 2013 & Science 2008



The Water Survey	Numeracy	Science
<p>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 data from the Water survey can be used to practice the following skills after the data collection in the field.</p> <p><b>Using data skills</b>  <b>Collect and record data</b>                      Plan how to collect data to test hypotheses.                      Construct frequency tables for sets of data (Year 7)</p> <p><b>Present and analyse data</b>                      Construct a wide range of graphs and diagrams to represent the data (Year 7) including pie charts (Year 9).                      Test hypotheses, making decisions about how best to record and analyse the information from large data sets. (Year 9).</p> <p><b>Interpret results</b>                      Interpret diagrams and graphs (including pie charts) to compare sets of data.                      Use mean, median, mode and range to compare two distributions (discrete data)                      (from Year 7)                      Select and justify statistics most appropriate to the problem considering extreme values (Year 9)</p>	<p><b>Skills</b></p> <p><b>Communication</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.</p> <p><b>Enquiry</b>  <b>Planning</b>                      Pupils can use the Water 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 <a href="http://www.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 make decisions about improving the school grounds for wildlife as a result.</p> <p><b>Reflecting</b>                      Pupils can use the Water 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://www.opalexplornature.org">www.opalexplornature.org</a> website.</p> <p><b>Range</b>  <b>Interdependence of organisms,</b>                      Pupils can use the results of the Water Survey to represent the habitat using a food –web .</p>

# OPAL Wales Curriculum Links for Key Stage 3 for Numeracy and Science ( Science 2008 & Numeracy 2013)



The Biodiversity Survey	Numeracy	Science
<p>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 data from the Biodiversity survey can be used to practice the following skills after the data collection in the field.</p> <p><b>Using data skills</b></p> <p><b>Collect and record data</b> Plan how to collect data to test hypotheses. Construct frequency tables for sets of data (Year 7)</p> <p><b>Using measuring skills. Length.</b> Read and interpret scales on a range of measuring instruments.</p> <p><b>Present and analyse data</b> Construct a wide range of graphs and diagrams to represent the data (Year 7) including pie charts (Year 9). Test hypotheses, making decisions about how best to record and analyse the information from large data sets. (Year 9).</p> <p><b>Interpret results</b> Interpret diagrams and graphs (including pie charts) to compare sets of data. Use mean, median, mode and range to compare two distributions (discrete data) (from Year 7) Select and justify statistics most appropriate to the problem considering extreme values (Year 9)</p>	<p><b>Skills</b></p> <p><b>Communication</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.</p> <p><b>Enquiry</b></p> <p><b>Planning</b> Pupils can use the Biodiversity 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>opalexplorenature.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 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>www.opalexplorenature.org</b> website.</p> <p><b>Range</b></p> <p><b>Interdependence of organisms,</b> Pupils can use the results of the Biodiversity Survey to represent the habitat using a food – web .</p>

# OPAL Wales Curriculum Links for Key Stage 3 for Numeracy and Science. Numeracy 2013 & Science 2008



The Soil Survey	Numeracy	Science
<p>The pupils dig a hole measuring the size 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.</p> <p>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 data from the Soil survey can be used to practice the following skills after the data collection in the field.</p> <p><b>Using data skills</b></p> <p><b>Collect and record data</b> Plan how to collect data to test hypotheses. Construct frequency tables for sets of data (Year 7)</p> <p><b>Present and analyse data</b> Construct a wide range of graphs and diagrams to represent the data (Year 7) including pie charts (Year 9). Test hypotheses, making decisions about how best to record and analyse the information from large data sets. (Year 9).</p> <p><b>Interpret results</b> Interpret diagrams and graphs (including pie charts) to compare sets of data. Use mean, median, mode and range to compare two distributions (discrete data) (from Year 7) Select and justify statistics most appropriate to the problem considering extreme values (Year 9)</p>	<p><b>Skills</b></p> <p><b>Communication</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.</p> <p><b>Enquiry</b></p> <p><b>Planning</b> Pupils can use the Soil 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 <a href="http://www.opalexplornature.org">www.opalexplornature.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.</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 <a href="http://www.opalexplornature.org">www.opalexplornature.org</a> website.</p> <p><b>Range</b></p> <p><b>Interdependence of organisms,</b> Pupils can use the results of the Soil Survey to represent the habitat using a food-web .</p>

# OPAL Wales Curriculum Links for Key Stage 3 for Numeracy and Science. Numeracy 2013 & Science 2008



The Air Survey	Numeracy Links	Science Links
<p>The Tar spot survey can be carried out at KS3, here pupils collect and measure the extent of Tar spot fungi on Sycamore Leaves.</p> <p>The Lichen air survey itself is best used for KS4 and above.</p>	<p>The fieldwork of the Tar spot survey can be used to practise the following skills;</p> <p><b>Using measuring skills;</b> Length; read and interpret scales on a range of measuring instruments.</p> <p><b>Using data skills</b> <b>Collect and record data</b> Plan how to collect data to test hypotheses. Construct frequency tables for sets of data (Year 7)</p> <p><b>Present and analyse data</b> Construct a wide range of graphs and diagrams to represent the data (Year 7) including pie charts (Year 9). Test hypotheses, making decisions about how best to record and analyse the information from large data sets. (Year 9).</p> <p><b>Interpret results</b> Interpret diagrams and graphs (including pie charts) to compare sets of data. Use mean, median, mode and range to compare two distributions (discrete data) (from Year 7) Select and justify statistics most appropriate to the problem considering extreme values (Year 9)</p>	<p><b>Skills</b> <b>Communication</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> <b>Planning</b> Pupils can use the Tar Spot 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 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 <a href="http://www.opalexplornature.org">www.opalexplornature.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.</p> <p><b>Reflecting</b> Pupils can use the Air 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://www.opalexplornature.org">www.opalexplornature.org</a> website.</p>

## OPAL Wales Curriculum Links for Key Stage 3 for Numeracy and Science. Numeracy 2013 & Science 2008



The Tree Health Survey	Numeracy	Science
<p>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 field work carried out during the Tree Health survey practices the following skills;  <b>Using measuring skills;</b>                      Length; read and interpret scales on a range of measuring instruments.                      Use the common units of measure, and convert between related units of the metric system and carry out calculations.( Year 8)</p>	<p><b>Range</b>  <b>Interdependence of organisms</b>                      Pupils can use the results of the Tree Survey to represent the habitat using a food –web .</p>

Welsh Government Document; Numeracy Programme of Study 2013

Science in the National Curriculum for Wales 2008