**Science Medium Term Plan-Year 6**

|  |  |  |  |
| --- | --- | --- | --- |
| **Our Changing World** | | | |
| **Lesson number and name** | **National Curriculum** | **Working Scientifically Links** | **Scientific Enquiry Type** |
| **1: How do animals behave during different times of the year?** | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | Grouping and classifying |
| **2: How can we observe animals when we are not there?** | Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird; identify how animals and plants  are adapted to suit their environment in different ways and that adaptation may lead to evolution | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | Pattern seeking |
| **3:How can we observe the life cycles of specific animals more closely?** | Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird; recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | Grouping and classifying |
| **4: How does the number, type and behaviour of birds found around our school change during the year?** | Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird; identify how animals and plants  are adapted to suit their environment in different ways and that adaptation may lead to evolution | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Pattern seeking |
| **5: What happens to invertebrates during the year?** | Describe how living things are classified into broad groups according to common observable characteristics, similarities and differences, including micro-organisms, plants and animals; identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Observing changes over different periods of time |

|  |  |  |  |
| --- | --- | --- | --- |
| **Module 1: The Nature Library** | | | |
| **Lesson number and name** | **National Curriculum** | **Working Scientifically Links** | **Scientific Enquiry Type** |
| **1: Can you sort this mess?** | Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro- organisms, plants and animals | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | Grouping and classifying |
| **2: Can you face the garden centre challenge?** | Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro- organisms, plants and animals | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | Grouping and classifying |
| **3: How are vertebrates grouped together?** | Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including animals; to give reasons for classifying animals based on specific characteristics | Reporting and presenting findings from enquiries including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Grouping and classifying |
| **4: How are invertebrates grouped together?** | Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including animals; to give reasons for classifying animals based on specific characteristics | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Grouping and classifying |
| **5: Where do things fit?** | Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including animals; to give reasons for classifying animals based on specific characteristics | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | Grouping and classifying |
| **6: What else is living besides plants and animals?** | Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including animals; to give reasons for classifying animals based on specific characteristics | Identifying scientific evidence that has been used to support or refute ideas or arguments | Grouping and classifying |
| **7: How can you grow your own micro-organisms?** | Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro- organisms, plants and animals | Planning different types of enquiries to answer questions including recognising and controlling variables where necessary | Observing changes over different periods of time |
| **8: Was it always this way?** | Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro- organisms, plants and animals; give reasons for classifying plants and animals based on specific characteristics | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays or other presentations; identifying scientific evidence that has been used to support or refute ideas | Finding things out using a wide range of secondary sources of information |
| **9: What happens when scientists disagree?** | Give reasons for classifying plants and animals based on specific characteristics | Identifying scientific evidence that has been used to support or refute ideas | Finding things out using a wide range of secondary sources of information |
| **10: What should we call it?** | Give reasons for classifying plants and animals based on specific characteristics | Presenting findings from enquiries in oral and written forms such as displays or other presentations | Grouping and classifying |
| **EL1: Can you make a nature guidebook for your school?** | Describe how living things are classified into broad groups according to common observable characteristics based on similarities and differences; give reasons for classifying plants and animals based on specific characteristics | Reporting and presenting findings from enquiries including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays or other presentations | Grouping and classifying |
| **EL2: What happens when the last one leaves?** | Describe how living things are classified into broad groups according to common observable characteristics based on similarities and differences; give reasons for classifying plants and animals based on specific characteristics | Identifying scientific evidence that has been used to support or refute ideas or arguments | Grouping and classifying |
| **Module 2: Body Pump** | | | |
| **Lesson number and name** | **National Curriculum** | **Working Scientifically Links** | **Scientific Enquiry Type** |
| **1: What does my circulatory system do?** | Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | Finding things out using a wide range of secondary sources of information |
| **2: What is a heart and what does it do?** | Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Finding things out using a wide range of secondary sources of information |
| **3: What is blood?** | Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood | Identifying scientific evidence that has been used to support or refute ideas or arguments | Finding things out using a wide range of secondary sources of information |
| **4: What is in blood?** | Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Finding things out using a wide range of secondary sources of information |
| **5: What do valves and blood vessels do?** | Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | Finding things out using a wide range of secondary sources of information |
| **6: What happens to water in our bodies?** | Describe the ways in which nutrients and water are transported within animals, including humans | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Finding things out using a wide range of secondary sources of information |
| **7: What does the road around our body look like?** | Identify and name the main parts of the human circulatory system and explain the functions of the heart, blood vessels and blood; to describe the ways in which nutrients and water are transported within animals, including humans | Identifying evidence that has been used to support and refute ideas or arguments | n/a |

|  |  |  |  |
| --- | --- | --- | --- |
| **Module 3: Body Health** | | | |
| **Lesson number and name** | **National Curriculum** | **Working Scientifically Links** | **Scientific Enquiry Type** |
| **1: What does being healthy mean?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Finding things out using a wide range of secondary information |
| **2: How is food divided into different groups?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Identifying scientific evidence that has been used to support or refute ideas or arguments | Grouping and classifying |
| **3: What makes a healthy snack or drink?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Recording data in a table and reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Finding things out using a wide range of secondary sources of information |
| **4: How have diets changed?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Identifying scientific evidence that has been used to support or refute ideas or arguments | Finding things out using a wide range of secondary sources of information |
| **5: How is pulse rate affected by exercise?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate; reporting and presenting findings from enquires, including degree of trust in results | Carrying out comparative and fair tests |
| **6: What are the benefits of sports and exercise?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Reporting and presenting findings from enquiries, including conclusions, causal relationships, in oral and written forms such as displays and other presentations and explanations of and degree of trust in results | Finding things out using a wide range of secondary sources of information |
| **7: How do drugs affect the body over time?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Presenting findings including causal relationships in oral and written forms | Finding things out using a wide range of  secondary sources of information |
| **9: Can you spread the healthy word?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Reporting and presenting findings from enquires, conclusions, including causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | n/a |
| **EL1: How do athletes keep fit?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Reporting and presenting findings from enquires, conclusions, including causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Finding things out using a wide range of secondary sources of information |
| **EL2: What happens when athletes cheat?** | Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and presentations | Finding things out using a wide range of secondary sources of information |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Module 4: Everything Changes** | | | |
| **Lesson number and name** | **National Curriculum** | **Working Scientifically Links** | **Scientific Enquiry Type** |
| **1: Why do living things vary?** | Recognise that living things produce offspring of the same kind, but that offspring normally vary and are not identical to their parents | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and/or bar and line graphs | Grouping and classifying |
| **2: Can you breed a dog for a specific purpose?** | Recognise that living things produce offspring of the same kind, but that offspring normally vary and are not identical to their parents | Identifying scientific evidence that has been used to support or refute ideas or arguments | Finding things out using a wide range of secondary sources of information |
| **3: How can we make our food better?** | Recognise that living things produce offspring of the same kind, but that offspring normally vary and are not identical to their parents | Identifying scientific evidence that has been used to support or refute ideas or arguments | Finding things out using a wide range of secondary sources of information |
| **4: How does the environment affect plants?** | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables | Carrying out comparative and fair tests |
| **5: How do environmental variables affect plants?** | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables | Carrying out comparative and fair tests |
| **6: How do living things survive?** | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations | Finding things out using a wide range of secondary sources of information |
| **7: Why do living things become extinct?** | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Identifying scientific evidence that has been used to support or refute ideas or arguments | Finding things out using a wide range of secondary sources of information |
| **8: What does it take to survive?** | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | n/a |
| **9: What evidence is there that living things have changed over time?** | Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago | Identifying scientific evidence that has been used to support or refute ideas or arguments | Finding things out using a wide range of secondary sources of information |
| **10: How does natural selection work?** | Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago | Identifying scientific evidence that has been used to support or refute ideas or arguments | Finding things out using a wide range of secondary sources of information |
| **EL1: How can one type of animal become two?** | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Identifying scientific evidence that has been used to support or refute ideas or arguments | Finding things out using a wide range of secondary sources of information |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module 5: Danger: Low voltage!** | | | | |
| **Lesson number and name** | **National Curriculum** | **Working Scientifically Links** | **Scientific Enquiry Type** | |
| **1: How many simple circuits can you make?** | Use recognised symbols when representing a simple circuit in a diagram | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | Carrying out simple  comparative and fair tests | |
| **2: What does a switch do?** | Compare the functions of different components, giving reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off positions of switches, and use recognised symbols when representing a simple circuit in a diagram | Recording data and results of increasing complexity using scientific diagrams and labels | Carrying out simple  comparative and fair tests | |
| **3: How strong is your resistance?** | Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit,  compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches, and use recognised symbols when representing a simple circuit in a diagram | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | Carrying out simple  comparative and fair tests | |
| **4: Do you know your circuit diagrams and can you construct working circuits from them?** | Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit,  compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches, and use recognised symbols when representing a simple circuit in a diagram | Recording data and results of increasing complexity using scientific diagrams, classification keys, tables, scatter graphs, bar and line graphs | Carrying out simple  comparative and fair tests | |
| **5: Will the lights stay on? (Part 1)** | There are no direct links to the three statements in the science national curriculum, as these two lessons involve carrying out research and constructing reports about electricity in everyday use | Reporting and presenting findings from enquiries in oral and written forms | Finding things out using secondary sources of information | |
| **6: Will the lights stay on? (Part 2)** | There are no direct links to the three statements in the science national curriculum, as these two lessons involve carrying out research and constructing reports about electricity in everyday use | Identifying scientific evidence that has been used to support or refute ideas or arguments | finding things out using secondary sources of information | |
| **EL1: Are you all wired up? (Part 1)** | Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit, compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches, and use recognised symbols when representing a simple circuit in a diagram | Recording data and results of increasing complexity using scientific  diagrams and labels, classification keys, tables, scatter graph and/or bar and line graphs | Carrying out simple  comparative and fair tests | |
| **EL2: Are you all wired up? (Part 2)** | Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit,  compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches, and use recognised symbols when representing a simple circuit in a diagram | Reporting and presenting findings from enquires, including conclusions, causal relationships and explanations of and degree of trust in results in oral and written forms such as displays and other presentations | Carrying out simple  comparative and fair tests | |
| **EL3: Can you protect the crown jewels? (Part 1)** | Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit,  compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches, and use recognised symbols when representing a simple circuit in a diagram | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graph and/or bar and line graphs | Carrying out simple  comparative and fair tests | |
| **EL4: Can you protect the crown jewels? (Part 2)** | Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit,  compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches, and use recognised symbols when representing a simple circuit in a diagram | Reporting and presenting findings from enquires, including conclusions, causal relationships and explanations of and degree of trust in results in oral and written forms such as displays and other presentations | Carrying out simple  comparative and fair tests | |
|  |  |  |  | |
| Module 6: Light up your world | | | | |
| **1: What is light and what does it do?** | Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes | Identifying scientific evidence that has been used to support or refute ideas or arguments | | n/a |
| **2: Can you see more than just your face in a mirror?** | Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye | Using test results to make predictions to set up further comparative and fair tests | | Noticing patterns |
| **3: Can light go round corners?** | Recognise that light appears to travel in straight lines; use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | | n/a |
| **4: Can you make a camera with a box, paper and**  **a pin?** | Recognise that light appears to travel in straight lines; use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye; explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs; identifying scientific evidence that has been used to support or refute ideas or arguments | | n/a |
| **5: How can you measure a shadow?** | Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | | Carrying out comparative and fair tests |
| **6: What do we know about changing shadow sizes?** | Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs | | Carrying out comparative and fair tests |
| **7: Can light change direction without a mirror?** | Recognise that light appears to travel in straight lines | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs; using test results to make predictions to set up further comparative and fair tests | | Exploration |
| **8: How many ways can you make a rainbow?** | Recognise that light appears to travel in straight lines | Recording data and results of increasing complexity using scientific diagrams and labels, | | n/a |
| **9: How much do you know about light?** | Recognise that light appears to travel in straight lines; use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye; explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes; use the idea that light travels in straight lines to explain  why shadows have the same shape as the objects that cast them | Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations | | n/a |
| **EL1: How can you make a good shadow puppet?** | Recognise that light appears to travel in straight lines; use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them | Reporting and presenting findings from enquires, including conclusions, causal relationships and explanations of and degree of trust in results in oral and written forms such as displays and other presentations | | n/a |
| **EL2: What makes a good shadow puppet theatre show?** | Recognise that light appears to travel in straight lines; use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them | Reporting and presenting findings from enquires, including conclusions, causal relationships and explanations of and degree of trust in results in oral and written forms such as displays and other presentations | | Noticing patterns |