Rocks, Fossils and Soils : Science : Year 3

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To be able to identify naturally occurring rocks and explore their uses.	Children will learn where rocks come from, then consider differences between naturally occurring rocks and man-made objects which are similar to rocks. They will then identify, describe and/or sort rocks and man-made objects.	• Do children know that rocks are used for a variety of purposes? • Can children identify some common rocks? • Can children identify rocks that are naturally occurring and those that are man-made?	• Slides • Worksheet 1A/1B/1C/1D • Picture Cards A • Picture Cards B (plenary) • Hoops
Lesson 2	To be able to group rocks according to their characteristics.	Children will consider ways in which rocks can be sorted according to different criteria. They may then either sort given rock samples, or study and sort pictures of rocks according to various criteria.	• Can children suggest ways of grouping rocks according to their characteristics? • Can children observe and compare rocks, and put them into different categories? • Can children justify their choices and explain their decisions?	• Slides • Worksheet 2A/2B/2C • Rock samples • Picture Cards (FSD? activity only)
Lesson 3	To be able to plan, carry out and evaluate experiments to compare rocks.	Children will start to learn about erosion. They will also consider how different rocks may be tested to determine how quickly they erode and whether they are permeable. Following this, children will conduct practical erosion/permeability investigations.	• Do children know what the terms 'erosion' and 'permeable' mean? • Can children plan and carry out an experiment to compare rocks based on certain characteristics? • Can children evaluate their results and draw conclusions?	• Slides • Worksheet 3A/3B/3C • Question Sheet • Rock Samples • Stopwatches • Beakers of water (FSD? activity only) • Pipettes (FSD? activity only)
Lesson 4	To identify rocks that are used for particular purposes.	Children will consider what sources may help them find out about a rock's uses, then carry out research to help them describe the characteristics of rocks and their uses.	• Can children use a variety of sources to find out information about rocks and their uses? • Can children organise the information they have found out? • Can children present the information they have found out clearly?	• Slides • Worksheet 4A/4B • Information Sheet • Books, CD ROMs, access to internet, etc. • A3 and A5 paper • Rock Cards (FSD? activity only)
Lesson 5	To explore soil and how it is formed.	Children will learn about soil: how it is formed and its uses. They will also study different types of soil. Following this, children will study and describe a variety of soil samples.	• Do children know that soil is made up of rocks and decaying organic matter? • Do children know that there are different types of soil? • Do children know that there are different layers of soil?	• Slides • Worksheet 5A/5B/5C • Three different soil samples • Graded sieves • Trowels and containers (FSD? activity only)
Lesson 6	To explore what fossils are and how they are formed.	Children will learn about how fossils are formed, then either describe this process in their own words or conduct a practical, 'fossil-making' activity.	• Do children know that rocks move in a continuous cycle? • Do children know what a fossil is? • Can children explain how fossils are formed?	• Slides • Worksheet 6A/6B/6C • Sentence Cards • Help Sheet (FSD? activity only) • Plasticine, plaster of Paris, petroleum jelly, card, paint (FSD? activity only)
Lesson 7	To be able to identify fossilised remains.	Children will study images of fossilised remains and discuss what can be learned about the animal by doing this. They may then either conduct research to find out about given images of fossils, or do a practical, 'fossil excavation' activity.	• Can children describe how fossils are formed? • Can children identify a variety of common fossils? • Do children know where fossils are more likely to be found and why?	• Slides • Worksheet 7A/7B/7C • Picture Cards • Cameras - optional • Chocolate chip biscuits (FSD? activity only) • Tools e.g. tweezers, cocktail sticks, etc. (FSD? activity only) • End of Unit Quiz Sheet

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Light and Shadow : Science : Year 3

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To recognise that we need light in order to see.	Children will learn that darkness is the absence of light, and that without light we cannot see. They will then identify, describe and sort a variety of light sources.	• Do children know that we need light in order to see things? • Do children know that dark is the absence of light? • Can children identify a variety of light sources?	• Slides • Worksheet 1A/1B/1C/1D • Picture Cards (FSD? activity only)
Lesson 2	To explore the Sun as a light source and identify the difference between night and day.	Children will learn about some differences between night and day, including starting to understand how the Sun rises and sets. They may then describe differences between night and day in their own words by answering questions, producing diagrams or writing poetry.	• Can children define the difference between night and day? • Do children know why the Sun rises and sets each day? • Do children know that we need light to see and that darkness is the absence of light?	• Slides • Worksheet 2A/2B/2C • Poem Template sheets (FSD? activity only)
Lesson 3	To investigate what shadows are and why they are formed.	Children will share their ideas about how objects could be tested to determine whether or not they will make a shadow. They may then either test their ideas, or explore the way shadows are created, using shadow puppets.	• Do children know that shadows are formed when light is blocked? • Do children know the difference between objects that are transparent, translucent and opaque? • Can children explore shadows using torches and express their findings?	• Slides • Worksheet 3A/3B/3C • Variety of opaque, transparent and translucent objects • Torches • Cardboard boxes, card, sticks, greaseproof paper (FSD? activity only) • Help Sheet (FSD? activity only)
Lesson 4	To investigate how shadows behave.	Children will continue to learn about how shadows are created, then conduct practical shadow investigations where they will predict, test and draw/write to show their findings.	• Do children know that shadows are formed when the light from a light source is blocked by a solid object? • Can children use simple equipment to explore how shadows behave? • Can children record findings using drawings and diagrams?	• Slides • Worksheet 4A/4B/4C • Variety of small objects • Torches • Challenge Cards (FSD? activity only) • Large sheets of paper (FSD? activity only)
Lesson 5	To investigate how the size of shadows change throughout the day.	Children will discuss and predict what will happen to a shadow cast by a stick in sunlight throughout the day. They may then conduct a shadow investigation and present their findings using bar graphs.	• Can children explain why shadows created by the Sun change position during the course of a day? • Can children plan and carry out an investigation? • Can children find patterns in the way the size of shadows change?	• Slides • Worksheet 5A/5B/5C/5D • Shadow stick, ruler and chalk • Access to computers (FSD? activity only)
Lesson 6	To explore how light is reflected from surfaces.	Children will learn that some surfaces reflect more light than others. They may then either identify and describe a range of reflective surfaces, or conduct a reflection investigation using mirrors.	• Do children know that light travels in a straight line? • Do children know that we need light in order to see? • Do children know that we see when light is reflected from a surface?	• Slides • Worksheet 6A/6B/6C • Mirrors • Challenge Card (FSD? activity only) • End of Unit Quiz

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

How Plants Grow : Science : Year 3

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To identify and describe the functions of the roots of flowering plants.	Children will recap the main features of flowering plants, then learn about how roots grow, and what their functions are. They will then plan an experiment where they will grow beans, measuring root growth.	• Can children name the main parts of flowering plants? • Can children explain the function of roots? • Can children record findings and draw conclusions?	• Slides • Worksheets 1A/1B/1C • Growing Beans worksheet • Dried bean seeds (butter beans, kidney beans or similar) • Cotton wool • Clear pots or jars • Water
Lesson 2	To investigate the way in which water is transported within plants.	Children will learn how water, absorbed by the roots is distributed around the plant via the stem. They will then conduct experiments where the capillary action in plant stems can be observed.	• Can children explain where plants get their water from? • Can children name the parts of the plant that transport water? • Can children plan and carry out simple investigations? • Can children draw simple conclusions?	• Slides • Worksheets 2A/2B/2C • Celery, food dye, water, plastic containers • Plastic cups, kitchen roll (FSD? activity only)
Lesson 3	To identify and describe the functions of leaves in flowering plants.	Children will start to learn how plants make their own food using air and sunlight. They will then either describe parts of this process in their own words, or plan and conduct an experiment to show the importance of light for plant growth.	• Can children say what plants need to produce their own food? • Can children explain the function of leaves in flowering plants? • Can children start to explain some stages in the life cycle of flowering plants?	• Slides • Worksheets 3A/3B/3C • Life Cycle Flowchart • Equipment as listed below (FSD? activity only)
Lesson 4	To explore the part that flowers play in the life cycle of flowering plants, including **pollination**, **seed formation** and seed dispersal.	Children will start to identify the parts of a flower, and how pollination occurs. They will then continue to identify and label the parts of a flower by drawing diagrams or dissecting flowers.	• Can children name the main parts of flowers? • Can children describe the functions of the main parts of flowers? • Are children able to describe one of the ways in which flowering plants reproduce? • Do children know how and where seeds are formed in flowering plants?	• Slides • Worksheets 4A/4B/4C • Dissecting Flowers worksheet (FSD? activity only) • Double-sided sticky tape (FSD? activity only) • Sticky tape or sticky-backed plastic (FSD? activity only) • Tweezers (FSD? activity only) • Flowers (FSD? activity only)
Lesson 5	To explore some of the ways in which flowering plants disperse their seeds.	Children will learn how the ovaries of flowering plants grow to form seeds, and how they may be dispersed in a variety of ways. They will then either continue to study in-depth some ways in which seeds are dispersed, or identify seeds found outside.	• Can children explain why flowering plants need to disperse their seeds? • Can children describe some ways in which seeds are dispersed? • Can children identify how seeds are dispersed based on their appearance?	• Slides • Worksheets 5A/5B/5C • Fruits and Seeds sheet • Seed Dispersal Fact File (FSD? activity only)
Lesson 6	To understand the structure of seeds and their importance as a food source.	Children will learn about the structure of seeds and how plants grow from them. They will then either taste and compare seeds, or make seed cake bird feeders.	• Can children name the parts of a seed and describe their functions? • Can children identify the parts of a seed? • Do children know why seeds are an important food source for animals?	• Slides • End of Unit Quiz • Worksheets 6A/6B/6C • A variety of different edible beans and seeds • Bird Seed Cakes sheet (FSD? activity only) • Bird seed mix (FSD? only) • Lard or equivalent (FSD? only) • Bread crumbs, cheese, oats, dried fruit {optional} (FSD? only) • Yogurt pots (FSD? only) • String (FSD? only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Health and Movement : Science : Year 3

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To identify that humans get the nutrition they need from what they eat.	Children will learn about the need for a varied diet in order to get the right nutrition, then either sort food into groups, giving reasons, or visit a supermarket to learn more about different food groups.	• Do children know that humans get nutrition from what they eat? • Can children identify and group a variety of foods? • Can children recognise foods for growth and foods for energy?	• Slides • Worksheet 1A/1B/1C/1D • Picture Cards • Group Cards • Digital cameras - optional (FSD? activity only)
Lesson 2	To identify that a balanced diet is needed in order to stay healthy.	Children will continue to learn about the need for a varied, balanced diet by looking at food pyramids and examples of healthy meals (and planning their own). They will also consider ways in which people with dietary restrictions can have a balanced diet.	• Do children know that humans need to eat to grow and move? • Do children understand what is meant by the term 'balanced diet'? • Can children identify and describe which food groups we should eat most of and which food groups we should eat least of?	• Slides • Worksheet 2A/2B/2C • Food Pyramid sheet (FSD? activity only)
Lesson 3	To investigate which foods different animals eat.	Children will find out about what some animals eat. They will use technical vocabulary to describe different types of animal, and present their findings (following research about animals, their habitats and their diets) in their own words.	• Do children know that different animals have different diets? • Can children use secondary sources to find out about the diets of different animals? • Can children recognise whether an animal is a herbivore, carnivore or omnivore?	• Slides • Worksheet 3A/3B/3C/3D • Books, internet, etc. • Animal Cards (FSD? activity only)
Lesson 4	To carry out an investigation to find out what pets eat.	Children will think about what questions could be asked to learn more about what pets eat. They may then either plan and conduct an investigation, or study a given set of results. In either case, children will present data using pictograms or bar graphs.	• Can children pose questions that can be investigated? • Can children gather data systematically? • Can children present and evaluate the results of an investigation?	• Slides • Worksheet 4A/4B/4C/4D/4E • Results Sheet (FSD? activity only)
Lesson 5	To explore human and animal skeletons.	Children will learn about bones in humans and other animals. They will then either label skeleton diagrams, or identify similarities between the skeletons of a variety of animals.	• Do children know that animals with a skeleton are called vertebrates? • Can children identify different bones in the human skeleton? • Can children compare bones in animal and human skeletons?	• Slides • Worksheet 5A/5B/5C/5D • Books, access to internet, etc. • Picture Cards (FSD? activity only) • Skeleton Sheet (FSD? activity only)
Lesson 6	To find out about how the skeleton supports and protects the body and to investigate how invertebrates are supported.	Children will learn about the functions of the skeleton in vertebrates, and how some invertebrates move and are protected in different ways. They will then research and describe various invertebrates.	• Do children know the difference between vertebrates and invertebrates? • Do children know that internal skeletons support and protect the body? • Do children know how the bodies of invertebrates support and protect them?	• Slides • Worksheet 6A/6B/6C • Books, access to internet, etc. • Picture Cards (FSD? activity only) • Label Cards (FSD? activity only)
Lesson 7	To find out what muscles are and how skeletal muscles help us to move.	Children will continue to learn about how the body moves, focussing on the ways muscles work. They will then study a variety of sources to find out more about muscles, noting their findings.	• Do children know that muscles help us move? • Do children know that muscles work in pairs to move different parts of the body? • Do children know that some animals have strong muscles for particular purposes?	• Slides • Worksheet 7A/7B/7C • Fact Cards • Challenge Cards (FSD? activity only) • End of Unit Quiz

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Forces and Magnets : Science : Year 3

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To explore what forces are and notice that some forces need contact between two objects.	In this initial lesson the children will identify forces as a push or a pull that will create, or stop a movement. They will identify the forces in different situations noting that many need contact in order for the force to be applied. The children will be challenged to identify forces using an arrow or to discuss how forces can create movement in different situations.	• Can children explain what a force is? • Do children know that some forces need contact between two objects? • Can children identify pushes and pulls and explain the forces in action?	• Slides • Forces Cards 1A/1B • Worksheet 1A • Close Slip 1A • Question Cards 1A (FSD? activity only)
Lesson 2	To compare how things move on different surfaces.	In this lesson the children will investigate how the texture of a surface affects how things move across them. They will be show how to use and read a force meter and conduct an experiment to measure the force it takes to move different objects. Alternatively, they can conduct a similar experiment, testing how far a toy car can travel across different surfaces.	• Do children know that forces can be measured in newtons using a force meter? • Can children set up and carry out an investigation to explore how objects move on different surfaces? • Can children draw conclusions from their observations?	• Slides • Worksheet 2A/2B/2C • Force meters • Access to a variety of surfaces, e.g. carpet, concrete, grass, wood, bubble wrap, etc. • Ramp and toy car (FSD? activity only) • Metre rulers/tape measures (FSD? activity only) • Class Results Sheet 2A (FSD? activity only) • Pre/Post-investigation Cards 2A (FSD? activity only)
Lesson 3	To explore how magnetic forces work.	Children will be introduced to magnets, and how they can exert a force on certain objects without touching them. They will explore the different forces a magnetic field can exert, depending on which poles are facing each other. In their independent activities, they will show their understanding of this by using the correct scientific vocabulary.	• Do children understand that a magnet does not need contact with an object for the force to be applied? • Can children explain what happens when the opposite poles of two magnets are placed close together? • Can children explain what happens when the same poles of two magnets are placed close together?	• Slides • Bar magnets • Worksheet 3A/3B/3C • Word Bank • Exploration Cards (FSD? activity) • Magnets of varying strengths and sizes, paper clips, string, tape (FSD? activity only) • Worksheet 3D (FSD? activity only)
Lesson 4	To be able to identify magnetic materials.	In this lesson, children recap on what they already know about magnets, before beginning to discuss and predict what other materials could be attracted to magnets. In their independent activities, children test a variety of materials, and are encouraged to notice what the magnetic materials have in common.	• Can children make and test predictions about whether materials are magnetic or not? • Can children make careful observations? • Can children group objects on the basis of whether or not they are magnetic?	• Slides • Worksheet 4A/4B/4C/4D • Magnets • Variety of materials to test (e.g. paper clips, rubbers, metal and wooden spoons, safety pins, aluminium cans, coins, pencils, scissors, keys etc.)
Lesson 5	To investigate uses for magnets.	In this final lesson the children will be challenged to discuss how magnets are used in everyday places as well as some more specific ways. They will then be asked to think about the strength of magnets and how this might affect the use of that magnet. They will conduct an investigation into the strength of magnets or, alternatively, they can make their own compasses using magnets.	• Can children name some uses for magnets? • Are children able to suggest ways in which magnets can be used to solve common problems? • Can children briefly describe how a compass works?	• Slides • Strength Experiment Sheet 5A • Worksheet 5A/5B/5C • Challenge Cards 5A/5B (FSD? activity only) • Worksheet 5D (FSD? activity only)

NB: 'FSD? activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

States of Matter : Science : Year 4

PlanBee™

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To compare and group materials together according to whether they are solids or liquids.	Challenge your class to define what solids and a liquids are and sort materials into groups based on their state. Children will discuss the different items that may not seem to fit and look closely at how they're made up including pourable solids such as rice or sand. Alternatively, explore and make observations of non-newtonian fluids as you make slime together.	• Can children provide a definition of solid or liquid? • Are children able to sort objects into solids and liquids? • Can children explain why they have placed an object into either group?	• Slides • Object Cards 1A • Sorting Cards 1A/1B/1C • Worksheet 1A/1B • Slime Recipe Cards 1A (FSD? activity only) • Ingredients for slime (FSD? activity only) • Challenge Cards 1A (FSD? activity only) • Worksheet 1C (FSD? activity only)
Lesson 2	To identify and explore the properties of gases.	Take a look at the third state that a material can be in and explore if gases have mass. Look at the different ways that gases are used in everyday life and how their different properties make them useful for different purposes.	• Can children name some of the properties of gases? • Are children able to write a scientific definition of a gas? • Can children use their scientific knowledge to draw conclusions about their experiment's results?	• Slides • Bottles with lids • Sponges • Containers of water • Experiment Card 2A • Worksheet 2A/2B/2C • Fizzy drink • Electronic scales • Syringes of different sizes (FSD? activity only) • Plastic tubes* (FSD? activity only) • Balloons (FSD? activity only) • Pneumatics Card 2A (FSD? activity only) • Worksheet 2D (FSD? activity only)
Lesson 3	To observe that materials change state when they are heated or cooled.	In this lesson the children will take a closer look at the particles in solids, liquids and gases and how they behave in these states. They will then use this knowledge to describe what happens when solids and liquids freeze and melt.	• Can children describe the difference between the particles in solids, liquids and gases? • Can children describe what melting is? • Can children describe what freezing is?	• Slides • Worksheet 3A/3B/3C • Recipe Cards 3A (FSD? activity only) • Ingredients (FSD? activity only) • Cooking equipment (FSD? activity only) • Party Cards 3A (FSD? activity only)
Lesson 4	To research the temperature in degrees Celsius (°C) at which materials change state.	This lesson challenges your class to research the melting points of different materials. They can use the internet to find the melting points of materials such as gallium, olive oil and gold. Alternatively, have your class design and reflect on an investigation about the melting points of different chocolate.	• Do children understand that different materials have different freezing/melting points? • Can children use their research skills to find the melting points of less common materials? • Can children evaluate an experiment's fairness and suggest improvements?	• Slides • Access to the internet • Sorting Cards 4A • Worksheet 4A/4B/4C • Experiment Card 4A (FSD? activity only) • Worksheet 4D (FSD? activity only) • Milk, white and dark (80% cocoa) chocolate (FSD? activity only) • Warm water (FSD? activity only) • Timers (FSD? activity only) • Foil trays (FSD? activity only)
Lesson 5	To understand the process of evaporation.	In this lesson the children will be asked to focus on the process of a liquid turning into a gas. They will think about the everyday examples of evaporation including puddles 'disappearing' throughout the day as well as the cooling effects of sweat on our skin. They will discuss the differences between evaporating and boiling as well as highlighting the boiling point of water. They are challenged to conduct an investigation into the rates of evaporation and how heat and air can affect them.	• Can children describe the process of evaporation? • Can children give an everyday example of water evaporating? • Can children describe a way to increase the rate of evaporation?	• Slides • Hand sanitiser • Teacher Notes 5A • Worksheet 5A/5B • Experiment equipment • Challenge Card 5A (FSD? activity only) • Ideas Sheet 5A (FSD? activity only) • Investigation Planner 5A (FSD? activity only) • Investigation equipment (FSD? activity only) • Design Sheet 5A (FSD? activity only)

NB: 'FSD? activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

States of Matter : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 6	To understand the process of condensation.	In this lesson the children will look at the opposite process to evaporation: condensation. They will think about what causes water to condense and look at some examples of this. They are then challenged to recreate a situation where they can see water condensing, including its use in a solar still to remove the salt from sea water.	• Can children name each of the ways a material can change state? • Are children able to describe condensation and when it happens? • Can children create a diagram to help them explain condensation?	• Slides • Teacher Notes 6A • Cling film or other flexible plastic • Ice cubes • Worksheet 6A/6B/6C • Challenge Card 6A (FSD? activity only) • Worksheet 6D (FSD? activity only) • Salt water (FSD? activity only) • Bowls and beakers (FSD? activity only) • Small weights (FSD? activity only)
Lesson 7	To identify the part played by evaporation and condensation in the water cycle.	This final lesson draws upon the children's learning of evaporation and condensation to describe the water cycle. They will look at four simplified steps of the water cycle and how these processes play a part.	• Do children know what the water cycle is? • Can children name the different stages of the water cycle? • Do children know that evaporation and condensation are processes that can be reversed?	• Slides • Teacher Notes 7A • Worksheet 7A/7B • Word Bank 7A • Water Cycle Diagram 7A (FSD? activity only) • Challenge Card 7A (FSD? activity only) • Sealable sandwich bags or plastic wallets (FSD? activity only)

NB: 'FSD? activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Changing Sound : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To find out that sounds are made when objects and materials vibrate.	Children will learn about how sounds are created, then explore the way sounds are produced by a variety of instruments or resonant objects.	• Do children know that sounds are made when objects or materials vibrate? • Can children make careful observations? • Can children draw conclusions about sounds from their observations?	• Slides • Worksheet 1A/1B/1C • Variety of musical instruments if available • Rice and drum; elastic bands; tuning fork and beaker of water; rulers; stereo speakers (if available) • Question Cards (FSD? activity only)
Lesson 2	To investigate whether sounds can travel through different materials.	Children will learn about how sounds travel through different materials. They will give reasons why they think some materials will transmit sound better/ worse than others, then investigate.	• Do children know that vibrations from sound sources travel through different materials to the ear? • Do children know sound can travel through solids, liquids and gases? • Do children know that some materials allow sound to pass through them more easily than others?	• Slides • Worksheet 2A/2B/2C • Drum/cymbal/something else loud! • Waterproof buzzer or ticking clock • Boxes with lid, water and sand with suitable containers (FSD? activity only) • Pre-prepared 'string telephones'
Lesson 3	To explore the relationship between distance and volume.	Children will explore ways in which sounds change as you move further away from its source. They will suggest reasons for their findings.	• Do children know that sounds get fainter as the distance from the sound source increases? • Can children carry out an investigation to explore what happens to sound as it gets further away? • Can children draw conclusions and describe what they have found out?	• Slides • Worksheet 3A/3B • Objects to make sounds • Metre sticks, tape measures, etc.
Lesson 4	To find out that some materials are effective in preventing vibrations from sound sources reaching the ear.	Children will learn about why it is sometimes necessary to prevent sounds from travelling, then investigate the soundproofing effectiveness of a range of materials.	• Can children name some of the reasons why preventing sound to travel is sometimes important? • Can children plan a test to measure how well different materials muffle sound? • Can children draw conclusions about which materials muffle sound the best?	• Slides • Worksheet 4A/4B • Buzzers/rattles/ticking clocks • Materials to test (e.g. foam sheets, fabric, newspaper, bubble wrap, tin foil, kitchen roll, clingfilm, paper towels, cotton wool, etc.)
Lesson 5	To investigate how sounds can be different pitches and volumes.	Children will learn about pitch and volume, then investigate ways in which they may be altered by a variety of instruments or resonant objects.	• Do children know that the term 'pitch' describes how high or low a sound is? • Can children recognise changes in pitch and identify high and low notes? • Can children investigate different instruments and make generalisations about pitch?	• Slides • Worksheet 5A/5B/5C • Xylophones/glockenspiels • Books, CD ROMs, access to internet, etc. • Variety of drums (FSD? activity only)
Lesson 6	To find out how the length, thickness and tightness of a string affects its pitch.	Children will consider how the pitch of notes produced by stringed instruments is altered, then investigate further by experimenting with instruments or by making instruments.	• Do children know that the pitch of a stringed instrument depends on the length, thickness and tightness of the string? • Can children suggest ways of testing what happens to the pitch of a string when you alter the length, tightness and thickness? • Can children draw conclusions from their observations?	• Slides • Worksheet 6A/6B/6C • Variety of stringed instruments • Elastic bands, boxes, tubes, etc. (FSD? activity only)
Lesson 7	To find out how sounds can be made by air vibrating and how to change the pitch of notes produced by vibrating air.	Children will learn how sounds can be made by air vibrating, then explore ways in which the pitch of these sounds can be altered.	• Do children know that sounds can be made by air vibrating? • Can children suggest ways to change the pitch of a sound made by air? • Can children describe how to change the length of the air column vibrating to change pitch?	• Slides • Worksheet 7A/7B/7C • Empty bottles • Water • Xylophones/glockenspiels • Recorders (FSD? activity only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Living in Environments : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To be able to identify a variety of habitats and explore why organisms live in different habitats.	Children will identify habitats, and consider why their conditions are important for the animals living in them. They will then either describe habitats in their own words, or explore a local habitat.	• Do children know what a habitat is? • Can children identify a variety of habitats? • Do children know that animals live in habitats that are suited to their needs?	• Slides • Habitat Cards • Riddle Cards • Animal Cards • Worksheet 1A/1B (FSD? activity only)
Lesson 2	To be able to group organisms according to their characteristics.	Children will organise animals into groups according to some of their characteristics. They may then either continue to sort animals according some of their own criteria, or examine some animals and group them based on observations.	• Can children identify similarities and differences between similar organisms? • Can children group animals and explain the criteria that has been used to sort them? • Can children make careful observations to identify the characteristics of different organisms?	• Slides • Worksheet 2A/2B/2C/2D • Animal Cards • Pots, trowels, etc. (FSD? activity only) • Microscopes/hand lenses (FSD? activity only)
Lesson 3	To be able to classify animals into specific groups according to their characteristics.	Children will use classification keys to identify and sort animals into groups. They may also study a range of sources to find out about a particular group of animals.	• Do children know that animals can be categorised into broad groups according to their characteristics? • Can children use a classification key to help them identify which group an animal belongs to? • Can children identify a variety of animals that are vertebrates, invertebrates, mammals, amphibians, insects, reptiles, fish and birds?	• Slides • Worksheet 3A • Animal Cards A/B/C • Animal Classification Key • Challenge Cards (FSD? activity only)
Lesson 4	To be able to use a classification key to identify animals.	Children will identify a range of animals from different environments using classification keys. Optionally, they may create and test their own classification keys.	• Can children use a classification key to identify unfamiliar animals? • Can children use close observations to identify an animal's characteristics? • Can children create their own classification keys to help identify an animal?	• Slides • Worksheet 4A/4B/4C • British Animals Classification Key A/B • Animal Cards (FSD? activity only)
Lesson 5	To be able to identify and classify a variety of British plants.	Children will use Venn Diagrams and Carroll diagrams to sort plants according to some of their characteristics. Some children may choose their own ways of sorting and classifying plants, too.	• Can children group a variety of plants according to their characteristics? • Can children use a classification key to identify plants? • Can children use other sources to help them identify a variety of local plants?	• Slides • Worksheet 5A/5B • Plant Cards • Digital cameras (FSD? activity only) • Books, access to internet, etc. (FSD? activity only)
Lesson 6	To explore the human impact on habitats and environments.	Children will consider ways in which animals living in environments are affected by human behaviour, then suggest ways in which we can help protect and sustain habitats.	• Do children know how one change in a habitat can affect all the organisms within that environment? • Can children list positive ways in which humans can impact the environment? • Can children list negative ways in which humans can impact the environment?	• Slides • Worksheet 6A/6B/6C • Scenario Cards

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Eating and Digestion : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To be able to identify and classify carnivores, herbivores and omnivores.	Children will identify similarities and differences between the diets of different organisms, then sort and describe them using technical vocabulary such as herbivore, carnivore, and omnivore.	• Can children explain why all animals, including humans, need to eat? • Can children identify animals that are carnivores, herbivores and omnivores? • Can children classify animals according to their diet?	• Slides • Worksheet 1A/1B/1C • Animal Cards A/B • Books, access to internet, etc. • Challenge Cards (FSD? activity only)
Lesson 2	To be able to construct and interpret a variety of food chains.	Children will learn about food chains, then organise a variety of organisms using food chains.	• Do children know what the terms 'producer' and 'consumer' mean in relation to food chains? • Can children interpret food chains? • Can children construct food chains?	• Slides • Worksheet 2A/2B/2C/2D/2E • Organisms Sheet • Name Tags (FSD? activity only)
Lesson 3	To identify the different types of teeth in humans and identify their functions.	Children will identify different types of human teeth and their functions. They will then sort, draw, label or describe teeth.	• Can children identify the different types of human teeth? • Do children know that the shape of teeth make them useful for different purposes? • Can children suggest reasons why animals might have different types of teeth?	• Slides • Worksheet 3A/3B/3C/3D • Mirrors (FSD? activity only)
Lesson 4	To explore different ways of keeping teeth healthy.	Children will learn about what happens to teeth during the lifetime of humans, and consider ways in which we can ensure our teeth stay healthy.	• Do children know that humans have two sets of teeth during their lifetime? • Can children explain why it is important to look after teeth? • Can children describe ways in which people can make sure their teeth stay healthy?	• Slides • Worksheet 4A • Poster Template • Information Sheet
Lesson 5	To investigate how the digestive system works.	Children will start to learn about the digestive system: its organs and their functions. They will then use a variety of sources to learn more and answer questions.	• Can children ask relevant questions? • Can children use different sources of information to find the answers to questions they have asked? • Can children name some of the organs associated with the digestive system?	• Slides • Worksheet 5A/5B/5C • Fact Cards • Additional information sources, e.g. books/posters • Question Cards (FSD? activity only)
Lesson 6	To be able to describe the functions of the basic parts of the digestive system.	Children will continue to learn, in greater depth, about the organs of the digestive system and their functions. They will then either draw and label diagrams to show what they have learned, or conduct a digestion experiment.	• Can children name the organs associated with the digestive system? • Can children describe the basic functions of the organs associated with the digestive system? • Can children describe the process of digesting food?	• Slides • Worksheet 6A/6B/6C/6D • Label Cards • Help Sheet (FSD? activity only) • Equipment for experiment - see Help Sheet (FSD? activity only) • End of Unit Quiz

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Circuits and Conductors : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To identify common appliances that run on electricity.	In this initial lesson the children will discuss what electricity is and how we use it in our day-to-day lives. They will think about which appliances around them use electricity and begin to think about batteries and plugs.	• Are children able to identify common appliances powered by electricity? • Can children say what we use electricity for and why it is important? • Are children able to describe electricity as a form of energy?	• Slides • Worksheet 1A/1B/1C • Sorting Sheet 1A • Electricity Hunt Sheet 1A
Lesson 2	To understand how to keep safe around electrical appliances.	This lesson leads a discussion with your class about how we can all stay safe when using electrical devices. The children will have the opportunity to spot potential hazards and discuss how they can be made safe.	• Can children explain some of the dangers of electricity? • Are children able to explain the difference between battery and mains electricity? • Are children able to say how they can stay safe around electricity?	• Slides • Worksheet 2A/2B/2C • Poster Template sheet (FSD? activity only)
Lesson 3	To construct simple circuits.	This lesson challenges your class to begin constructing simple circuits with single or multiple components, observing what they see as they do so. The children will learn about what a complete circuit is, as well as the names of different components and short circuits.	• Can children label the components of a circuit? • Are children able to construct simple circuits? • Can children make observations about simple circuits?	• Slides • Circuits equipment • Picture Cards 3A • Worksheet 3A/3B • Challenge Cards 3A • Circuit Cards (FSD activity only)
Lesson 4	To recognise common conductors and insulators.	In this lesson the children will discuss how electricity can flow through, or not flow through, different materials. They will experiment with, and sort materials based on if they are electrical conductors or insulators, making predictions about the materials. Alternatively, they can make a switch using given objects to use as a buzzer in a quiz game.	• Can children set up a fair test? • Can children make predictions about whether a material is a conductor or insulator? • Are children able to say whether a material is a conductor or insulator?	• Slides • Circuits equipment • Worksheet 4A/4B/4C • Picture Card 4A • Quiz Questions 4A (FSD? only activity)
Lesson 5	To make a simple device which includes a circuit.	In this lesson the children will use all they have learnt about electrical components to create an electrical circuit which will be used to power a simple device. The children will need to work together to discuss and figure out how they can use a circuit in their device.	• Can children create a simple circuit with a switch? • Are children able to create a simple, functioning device which uses electricity? • Can children troubleshoot and solve problems with their circuit?	Slides Challenge Card 5A/5B/5C Flexible, thick wire Circuits equipment including bulbs and buzzers Challenge Card 5D/5E (FSD? activity only) Sturdy cardboard (FSD? activity only) Worksheet 5A (FSD? activity only) End of Unit Quiz

NB: 'FSD? activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Properties and Changes of Materials : Science : Year 5

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To know that some materials will dissolve in liquid to form a solution	Children will explore what happens to substances when they are mixed with water. In their independent activities, they will conduct a fair test to find out which substances are soluble, and which are insoluble. In the FSD? activity, children will explore what factors other than temperature can help jelly cubes to dissolve more quickly.	• Do children understand the terms 'dissolve', 'soluble', 'insoluble' and 'solution'? • Can children make and explain their predictions about soluble and insoluble materials? • Can children conduct a fair test involving soluble and insoluble materials?	• Slides • Beakers, teaspoons, stopwatch, water • Sugar, pepper, cooking oil, flour, wax flakes, food colouring • Worksheet 1A/1B/1C • Challenge Card A/B/C/D (FSD? activity only) • Beakers, thermometers, stopwatch, water (warm), jelly cubes, knives, spoons (FSD? activity only) • Worksheet 1D (FSD? activity only)
Lesson 2	To use knowledge of solids, liquids and gases to decide how mixtures and solutions might be separated	Children will explore ways in which the original materials in some mixtures and solutions may be recovered, by the process of evaporation, or by sieving or filtering. In their independent activities they will use their knowledge and understanding of soluble and insoluble substances to explain how mixtures could be separated.	• Do children know what the terms soluble and insoluble mean? • Do children know that evaporation can be used to separate soluble materials from water? • Do children know that filtering can be used to separate insoluble materials from water?	• Slides • Worksheets 2A/2B/2C • Investigation Cards (FSD? activity only) • Worksheet 2D (FSD? activity only) • Beakers, water, filter paper, different sizes of sieve, teaspoons, pepper, rice, glitter, marbles, sand, salt, sugar, paperclips (FSD? activity only)
Lesson 3	Explain that some changes form new materials, and that these changes are not usually reversible	Children will identify solutions which are the product of irreversible reactions between the substances that were dissolved. They will then carry out practical investigations involving irreversible reactions.	• Do children know that when some materials are mixed together they cannot be separated again? • Do children know that when an irreversible change takes place a new substance is produced? • Do children know how to tell if the new substance produced is a gas?	• Slides • Worksheets 3A/3B/3C • Water, lemon juice, sugar, baking soda, plaster of Paris • Worksheet 3D • Diet Coke, Mentos (FSD? activity only) • Film canister, water, effervescent tablets
Lesson 4	To identify when a change caused by heating or cooling is reversible or irreversible	Children will learn about reversible and irreversible changes caused by heating or cooling materials. They will then either predict and sort materials according to what may happen when they are heated or cooled, or explore irreversible reactions by cooking.	• Do children know that heating and cooling materials can cause them to change? • Can children recognise reversible and irreversible changes caused by heating and cooling? • Can children explain how to reverse a change caused by heating or cooling?	• Slides • Worksheets 4A/4B/4C • Recipe Sheet (FSD? activity only) • Cooking Safely Poster (FSD? activity only) • Ingredients and equipments as listed on Recipe Sheet (FSD? activity only)
Lesson 5	To investigate the materials needed for something to burn and the new materials formed by burning	Children will consider what happens when materials are burned, including what new materials are produced. They will carry out investigations involving burning a candle and explain what is happening.	• Do children know that new materials are formed when materials are burned? • Can children describe what happens when a candle burns? • Can children identify and assess hazards associated with burning materials?	• Slides • Worksheets 5A/5B/5C • Candle Video • Candle, glasses, safety matches, stopwatch, heat safety mats • Teacher Notes (FSD? activity only) • Observation Sheet 5A (FSD? activity only) • Water, shallow bowl or dish, glasses x3, candle, tea light, tile, safety matches (FSD? activity only)
Lesson 6	To compare and group together everyday materials on the basis of their properties	Children will identify and discuss several different properties of a range of materials (conductive, magnetic, soluble, flexible, transparent etc.), then either sort and group given sets of materials, or use their scientific enquiry skills to explore the properties of some materials.	• Can children describe everyday materials according to their properties? • Can children compare and group everyday materials according to their properties? • Can children explain why some everyday materials are useful due to their properties?	• Slides • Worksheets 6A/6B/6C • Materials Cards • Activity Cards (FSD? activity only) • Batteries, bulbs and wires; magnets; torches; weights; water and a variety of materials to be tested according to their properties (FSD? activity only)
Lesson 7	To give reasons for the particular uses of everyday materials in relation to their properties	Children will first recap on the vocabulary used to describe the properties of different materials, before taking a closer look at some of them, and why materials with these properties are used for certain purposes. In their independent activities, children will use their knowledge and reasoning skills to explain how the properties of a material make it useful for a specific purpose.	• Can children list and explain some of the different properties that materials can have? • Do children understand that the properties materials have can affect how they are used/what they are used for? • Can children explain why a certain material has been chosen for a specific purpose, based on its properties?	• Slides • Worksheet 7A/7B/7C • Challenge Cards (FSD? activity only) • This vs That Cards (FSD? activity only) • Picnic Items Cards (FSD? activity only) • Picnic Priorities Sheet (FSD? activity only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Earth and Space: Science : Year 5

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To describe the movements of the Sun, Earth and Moon.	Children will learn about the celestial bodies of the Sun, Moon and Earth and how they are related to one another. They will learn that each of them are a roughly spherical shape and investigate and define the word 'orbit'. They will use these scientific words in a brief description of the Sun, Earth and Moon's movements around each other.	• Can children describe the Sun, Earth and Moon's shape as roughly spherical? • Are children able to clearly define the word orbit? • Can children describe the Sun, Earth and Moon's movements in relation to one another?	• Slides • Teacher Notes 1A • Worksheet 1A/1B/1C • Fact Cards 1A • Worksheet 1D/1E (FSD? Activity only) • Template 1A (FSD? activity only) • Split pins (FSD? Activity only)
Lesson 2	To explore how the rotation of Earth creates day and night.	Children will learn that the rotation of Earth on its axis is what creates day and night. They will conduct an investigation using sundials and make observations on what they record throughout the experiment. Alternatively, they will explore time zones using the internet and how, and why, locations have different time zones.	• Can children explain how the rotation of Earth on its axis creates day and night? • Can children explain the apparent movement of the sun across the sky? • Can children identify how long it takes Earth to make a full rotation?	• Slides • Worksheet 2A/2B/2C • Pencils • Sticky-tac • Time Zone Cards 2A (FSD? activity only) • Access to the internet (FSD? activity only) • Question Cards 2A (FSD? activity only) • City Cards 2A (FSD? activity only)
Lesson 3	To learn about how Earth's tilt creates seasons.	Children will learn about how the seasons are created because of the tilt of Earth's axis. They will learn how Earth is split into its Northern and Southern Hemispheres and how the seasons are different for the two halves of the planet. They will identify the seasons for the Northern Hemisphere based on the location of Earth in its orbit. Alternatively the children will investigate day length and how it changes seasonally using data and graphs.	• Can children describe the different changes that happen between seasons? • Can children use Earth's tilted axis to explain how seasons are created? • Can children describe the differences in seasons between two locations in opposite hemispheres?	• Slides • Worksheet 3A/3B • Season Labels 3A/3B • Statistics Cards 3A/3B (FSD? Activity only) • Graph Paper 3A (FSD? Activity only) • Worksheet 3C (FSD? Activity only) • Question Cards 3A/3B (FSD? Activity only)
Lesson 4	To learn about the phases of the Moon.	Children will be guided through the lunar month and the eight phases of the Moon that can be seen as the Moon orbits Earth. They will learn to identify the shapes of each phase and the names of these shapes, including if the phase is waxing or waning. They will create their own spinning diagram of each of these phases.	• Can children name the different phases of the moon? • Are children able to order the phases of the moon? • Can children describe how the phases of the moon are created?	• Slides • Teacher Notes • Worksheet 4A/4B • Split pins • Template 4A • Moon Cards 4A • Moon Cards 4B (FSD? activity only)
Lesson 5	To discover how theories about our solar system have changed.	Children will learn about and discuss how the ideas about the solar system developed and changed over the years until we arrived at the model we have today. The children will compare the similarities and differences between a geocentric and heliocentric model of the solar system.	• Are children able to define what a solar system is? • Can children explain what the differences between geo- and heliocentric models of the solar system are? • Can children compare the ideas of the solar system we know now, with those held by Ptolemy and Copernicus?	• Slides • Solar System Fact Cards 5A/5B • Worksheet 5A/5B/5C • Access to the internet (FSD? activity only) • Worksheet 5D (FSD? activity only)
Lesson 6	To investigate the planets in the solar system.	Children will conduct their own research into the planets within our solar system. They will discuss the objects in our solar system as a class, including natural satellites, comets, asteroids (and the asteroid belt), planets and dwarf planets. They will work to create their own fact book or model of the solar system.	• Can children name the eight planets in our solar system? • Are children able to name the eight planets in order from nearest to farthest from the Sun? • Can children use researching skills to find relevant information on a topic?	• Slides • Mnemonic Strip 6A • Templates 6A/6B/6C • End of of Unit Quiz • Flag Template 6A (FSD? activity only) • Polystyrene balls (FSD? activity only) • Skewer sticks (FSD? activity only)

NB: 'FSD? activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Life Cycles : Science : Year 5

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To describe the process of sexual reproduction in flowering plants.	Children will recap the names of parts of a flower and learn about how flowering plants reproduce sexually. They will then either label diagrams of flowering plants or dissect flowers.	• Can children name and describe the functions of the main parts of flowers? • Can children describe the life process of sexual reproduction in flowering plants? • Can children identify and label the parts of flowers?	• Slides • Worksheets 1A/1B/1C • Dissecting Flowers (FSD? activity only) • Double-sided sticky tape, tweezers, flowers (FSD? activity only)
Lesson 2	To describe the process of asexual reproduction in plants.	Children will learn about some ways in which non-flowering plants reproduce asexually, then either describe one of these processes in their own words or grow plants from cuttings.	• Do children understand what asexual reproduction is? • Can children explain some ways in which plants reproduce asexually? • Can children describe the life cycles of some asexually reproducing plants?	• Slides • Worksheets 2A/2B/2C • Growing Cuttings (FSD? activity only) • Plant Picture Cards • Word Bank
Lesson 3	To describe the process of sexual reproduction in animals.	Children will learn about sexual reproduction in animals, including some ways in which some reptiles and fish reproduce. They will then either sort and classify animals, or compare their life expectancies and gestation periods.	• Can children define some of the ways in which sexual reproduction in animals occurs? • Can children compare species that reproduce in different ways and consider reasons why? • Can children record data using scientific graphs and/or diagrams?	• Slides • Worksheets 3A/3B/3C • Animal Fact Cards • Animal Offspring (FSD? activity only)
Lesson 4	To observe and compare the life cycles of animals in our local environment with other animals around the world.	Children will study and compare the life cycles of animals living in a variety of environments. They will then either research animals living in different environments, or compare the life cycles of two animals living in different environments.	• Can children describe the conditions in a local environment as well as other environments around the world? • Can children establish causal links between the life cycle of animals and their environment? • Can children compare the life cycles of animals living in different environments?	• Slides • Challenge Card • Books, atlases, CD ROMs, internet etc. • Comparing Life Cycles (FSD? activity only)
Lesson 5	To compare how different animals reproduce and grow.	Children will learn more about the life cycles of animals, focussing on gestation periods and growth. They will then explain the life cycles of animals in their own words, using technical vocabulary.	• Using scientific vocabulary, can children explain some of the ways in which different animals reproduce? • Can children compare the life cycles and methods of reproduction of different animals? • Are children able to give reasons for the differences between life cycles of different animals?	• Slides • Picture Book 5A/5B/5C • Animal Fact Cards • Write A Class Book! (FSD? activity only)
Lesson 6	To find out about the work of naturalists.	Children will learn about the work of naturalists and animal behaviourists, then research and write in-depth about a well-known naturalist.	• Do children understand what naturalists do? • Can they explain why the work of naturalists is important? • Can children give reasons why secondary sources of scientific evidence cannot always be trusted?	• Slides • Worksheets 6A/6B/6C • Famous Naturalists (FSD? activity only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Changes and Reproduction : Science : Year 5

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To recognise the stages of growth and development in humans.	Children will learn about, then order, the main stages in the life cycle of humans. They will then consider and describe factors which may affect the rate of growth in humans.	• Can children name the main stages in the life cycle of humans? • Can children correctly order the main stages? • Can children broadly define the age ranges for each of the main stages? • Can children explain some of the physical changes that occur at different stages in the life cycle of humans?	• Slides • Worksheets 1A/1B/1C • Newborn Baby worksheet (FSD? activity only) • Books, websites etc. about babies (FSD? activity only)
Lesson 2	To know the stages in the gestation period of humans and compare them to other animals.	Children will learn about sexual reproduction, fertilisation and pregnancy for humans. They may then compare the gestation periods of humans with other animals.	• Can children describe the main stages of gestation in humans? • Can children explain how embryos and fetuses grow and develop in the womb? • Can children define and use key vocabulary to describe gestation in humans?	• Slides • Worksheets 2A/2B/2C • Gestation Periods cards (FSD? activity only) • Sticky notes and digital cameras (FSD? activity only)
Lesson 3	To recognise the stages of development during childhood and understand the needs of children at those stages.	Children will learn about changes during infancy and childhood, then consider the needs of children, and how these change over time as they develop.	• Can children describe the needs of a newborn baby? • Can they compare the needs of a human baby to those of other mammals? • Can they describe the stages of development that occur during childhood? • Can they describe how the needs of humans change at different points in their life cycle?	• Slides • Worksheets 3A/3B/3C • Childhood Fact Sheet (FSD? activity only) • Typical Day Agenda worksheet (FSD? activity only)
Lesson 4	To understand the initial changes inside and outside of the body during puberty.	Children will learn about the roles of some hormones in the body, and how they affect changes in boys and girls at the start of puberty. They will also identify and describe or label changes that occur inside and outside the body.	• Can children explain the initial changes that occur inside and outside the body at the start of puberty? • Can children correctly identify the parts of the body that change during puberty? • Can children explain in simple terms the role played by hormones in the growth of humans and other animals?	• Slides • Worksheets 4A/4B/4C • Puberty: Initial Changes • Comic Strip (FSD? activity only)
Lesson 5	To know the changes that occur during puberty and how they differ for boys and girls.	Children will learn about later changes during puberty and adolescence, including sperm production and menstruation. They will then consider and describe ways in which children can stay fit and healthy during puberty.	• Can children remember some of the initial changes during puberty? • Can children explain some of the ways in which boys' and girls' bodies start to differ during puberty? • Can children suggest some ways in which teenagers can look after themselves and stay fit and healthy during puberty?	• Slides • Worksheets 5A/5B/5C • Keeping Fit • Puberty Problems (FSD? activity only)
Lesson 6	To understand how the body changes during adulthood and old age.	Children will learn about some changes in the body that occur during adulthood and old age. They may then either describe ways in which they may change as they get older, or discuss some problems associated with stereotypical views regarding the elderly.	• Can children explain some ways in which the body changes during old age? • Can children describe some ways in which older people can stay fit and healthy?	• Slides • Worksheets 6A/6B/6C • Photographs of children in your class (optional) • Old-age Stereotypes (FSD? activity only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Forces in Action : Science : Year 5

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.	Children will consider what weight is, and how the impact caused by falling objects can vary, depending on their size, shape, mass, and the height they fall from.	• Can children explain why objects fall towards the centre of the Earth? • Do children understand the causal link between the mass of an object and the amount of force with which gravity acts on it?	• Slides • Worksheets 1A/1B/1C • Large trays, flour, cocoa/chocolate powder, marbles, ball bearings, golf balls etc. • Challenge Cards (FSD? activity only) • Books, internet etc. (FSD? activity only)
Lesson 2	To identify the effects of friction acting between moving surfaces.	Children will learn about what friction is and some ways in which it can be measured. They will also identify instances of high and low friction and conduct friction investigations.	• Can children define friction? • Do children know that friction can be useful and give some examples? • Can children carry out an investigation, making sure that it is a fair test?	• Slides • Worksheets 2A/2B/2C/2D • Forcemeters • Variety of surfaces to test • Rubbers (FSD? activity only) • Challenge Sheet (FSD? activity only)
Lesson 3	To identify and explain the effects of air resistance.	Children will learn about ways in which air resistance affects moving objects, then plan and conduct investigations where they will determine how air resistance affects falling objects.	• Do children know that air resistance is a force that slows objects moving through the air? • Can children plan, carry out and assess experiments to investigate air resistance? • Can children draws conclusions from their investigations?	• Slides • Worksheets 3A/3B/3C/3D • Plastic Bag Parachute sheet • Plastic bags, string/wool, paper clips, rubber bands • Spinner Template (FSD? activity only)
Lesson 4	To identify and explain the effects of water resistance.	Children will learn about water resistance and how it affects objects moving through water. They will then conduct water resistance investigations.	• Do children know that water resistance slows an object moving through water? • Can children plan and carry out an experiment, making sure it is a fair test? • Can children identify trends in results and draw conclusions?	• Slides • Worksheets 4A/4B/4C/4D • Measuring cylinders or equivalent • Water • Plasticine • Stopwatches • Results Sheet (FSD? activity only)
Lesson 5	To recognise that levers and pulleys allow a smaller force to have a greater effect.	Children will learn how simple machines can make it easier to move objects. They will then make and test models which have pulleys or levers.	• Do children recognise that that levers and pulleys allow a small force to have a greater effect? • Can children make and improve models that use pulleys or levers? • Can children explore the effects of changing parts of their model?	• Slides • Worksheets 5A/5B/5C • Lollipop sticks, rubber bands (FSD? activity only) • Lolly Stick Catapult sheet (FSD? activity only) • Marshmallows or play dough (FSD? activity only) • Milk/water bottles with handles • String, cord or thin rope • Broomsticks or thick dowel rods
Lesson 6	To recognise that gears allow a smaller force to have a greater effect.	Children will learn about how gears work together in transmissions and look at a variety of transmission. They will then make models to explore in greater depth how gears work.	• Do children recognise that the speed or amount of force transmitted is affected by changing the size of the gears in a transmission? • Can children make transmissions where two or more gears work together?	• Slides • Worksheets 6A/6B/6C • Cut-out Gears • Types of Transmission sheet (FSD? activity only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Healthy Bodies : Science : Year 6

PlanBee

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To find out how scientific ideas about food and diet were tested in the past and how this has contributed to our knowledge of a balanced diet.	Children will learn about historical health problems caused by poor diet, and how the work of scientists such as James Lind helped develop a better understanding of how diet affects health. They will then consider and describe how medical tests and trials might be conducted, or improved.	• Can children describe some examples of how doctors in the past tested ideas about food and diet? • Do children know how these tests in the past have affected our ideas about healthy eating today? • Do children know that in order to be healthy we need a balanced diet which includes different food groups?	• Slides • Worksheet 1A/1B/1C/1D • Information Sheet • Question Cards (FSD? activity only)
Lesson 2	To investigate some different food groups and find out why a variety of foods is important for a healthy diet.	Children will learn about food groups: what they provide our bodies with, and what quantities of each we need in a balanced diet. They will then either design balanced meals or study food labelling.	• Can children name some of the different food groups? • Do children know which types of foods are included in different food groups? • Do children know why each different food group is important for a healthy lifestyle?	• Slides • Worksheet 2A/2B/2C/2D/2E • Information Sheet • Food Label Cards (FSD? activity only)
Lesson 3	To find out how nutrients and water are transported in the human body.	Children will learn about the functions of the heart, lungs and circulatory system, then either draw and label diagrams, or perform a heart dissection to study its internal structure.	• Do children know that the circulatory system transports blood and nutrients to the different parts of the body? • Can children describe how the circulatory system works? • Can children record their own resting pulse rate accurately?	• Slides • Worksheet 3A/3B • Label Cards • Heart Dissection Sheet (FSD? activity only) • Equipment for dissection as listed on sheet (FSD? activity only)
Lesson 4	To investigate what happens to the heart when we exercise and why.	Children will learn about what happens to the heart when we exercise, then conduct practical investigations where heart rate is measured.	• Can children describe the functions of the heart? • Can children investigate how the heart is affected through exercise and draw conclusions? • Do children know that hearts need to have exercise to stay healthy?	• Slides • Worksheet 4A/4B/4C/4D • Clocks and/or stopwatches
Lesson 5	To investigate how muscles move the skeleton and how muscle activity requires increased blood flow.	Children will learn about how muscles work, and how they work in groups to move the skeleton. They will then explore in greater depth how blood flow increases to different muscle groups during different types of exercise.	• Do children know that muscles work in pairs to move different parts of the skeleton? • Do children know that when muscles exercise they need an increased flow of blood because the muscles are working harder? • Can children explain why their pulse rate increases when they exercise?	• Slides • Worksheet 5A/5B/5C • Human Muscles Diagram
Lesson 6	To investigate the effects of tobacco, alcohol and other drugs.	Children will learn about what drugs are, how some are helpful and some are harmful. They will also consider ways in which drugs have side effects. Following this, children may explain differences between drugs, or their effects, in their own words.	• Do children know that drugs affect the way the mind or body works? • Do children know that some drugs are beneficial even though they may have unpleasant side-effects? • Are children aware of some of the negative effects of tobacco and alcohol on the body?	• Slides • Worksheet 6A/6B/6C • Information sources • Challenge Cards (FSD? activity only)
Lesson 7	To evaluate what we can do to keep our bodies healthy.	In the light of prior learning about the functions of the human body, children will gather their ideas about staying healthy, and present them in a variety of ways. They will also do an end of unit quiz.	• Can children describe the impact that diet has on the body? • Can children describe why exercise is important for a healthy lifestyle? • Can children describe the harmful effects some drugs can have on the body?	• Slides • Worksheet 7A/7B • Profile Cards • Challenge Card (FSD? activity only) • Video cameras (FSD? activity only) • End of Unit Quiz

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Seeing Light : Science : Year 6

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To recall facts about how shadows are formed.	Children revisit their knowledge about how shadows are formed and the objects which create them. They focus specifically on the shapes of the shadows and why shadows are the shape of the object which creates them.	• Are children able to identify light sources and describe how light travels? • Can children use their knowledge of how light travels to explain how a shadow is created? • Can children explain why a shadow takes the shape of the object casting it?	• Slides • Worksheet 1A/1B/1C • Word Bank 1A • Shadow Puppet Sheet 1A (FSD? activity only) • Light sources e.g. torches and plain paper (FSD? activity only)
Lesson 2	To investigate how we can change shadows.	Children conduct an investigation into how we can change and manipulate shadows 'shape, length, intensity and in particular, size. They conduct an experiment, identifying the key variables, and observe the results. They then draw conclusions from their results.	• Can children give a clear, scientific description of translucent, transparent and opaque and how this property affects an object's shadow? • Are children able to describe and explain how an object's shadow can be manipulated? • Can children make informed conclusions from their investigations?	• Slides • Challenge Cards 2A/2B/2C • Worksheet 2A/2B/2C/2D • Light sources e.g. torches, lamps etc. • Investigation Cards 2A (FSD? activity only)
Lesson 3	To understand how our eyes allow us to see.	In this lesson the class will take a closer look at the anatomy of our eyes and how the different parts allow us to see. The children will complete diagrams to explain and identify the different parts of the eye.	• Can children name the parts of the eye? • Can children describe what the main parts of the eye do to help us see? • Do children understand that without light, we cannot see?	• Slides • Worksheet 3A/3B/3C • Eye Diagram 3A • Word Bank 3A • Answer Cards 3A (FSD? activity only) • Question Strips 3A (FSD? activity only)
Lesson 4	To understand how we see objects.	This lesson will teach the children that all objects reflect and absorb different amounts of light. They will discover that it is these reflections that allow us to see objects. They will complete diagrams of how we can see different objects and write explanations of the process.	• Can children name the parts of the eye and briefly describe what the main parts do? • Can children complete a diagram to show how light allows us to see an object? • Do children understand that all objects reflect an amount of light?	• Slides • Worksheet 4A/4B/4C • Mirrors (optional) • Diagram Cards 3A (FSD? activity only)
Lesson 5	To investigate reflection.	Children will learn about the law of reflection and use their knowledge and understanding of identifying and measuring angles to predict reflected light rays. They will identify the angle of incidence and reflection and use these to complete a light maze.	• Can children give a scientific definition of the word 'reflect'? • Do children understand that the angle of incidence is equal to the angle of reflection? • Can children think of examples of how angled mirrors can be used in different ways?	• Slides • Light Maze • Light Angles Poster 5A • Mirrors, protractors, torches • Teacher Notes • Instructions Sheet 5A & Template 5A (FSD? activity only) • Worksheet 5A (FSD? activity only)
Lesson 6	To learn about refraction	Children will learn about how refraction can bend and change the direction of light rays. They will then need to differentiate between whether or not an object will reflect or refract light.	• Can children give a brief description of what happens to light when it's refracted? • Are children able to differentiated between if an object will reflect or refract light? • Can children give some examples of objects which use refraction in a useful way?	• Slides • Sorting Cards 6A/6B • Worksheet 6A/6B • What if? Cards 6A (FSD? activity only) • Any text e.g. a newspaper, clear plastic, water (FSD? activity only)
Lesson 7	To investigate the colours in white light.	Children will investigate how white light can be split into the seven colours of the rainbow. They will find out about Isaac Newton's experiments with prisms and discuss how we see colours.	• Do children understand that white light can be split into a spectrum of seven colours? • Are children able to name the seven colours that light can be split into? • Can children explain how the light is refracted based on the colours' wavelengths?	• Slides • Worksheet 7A/7B/7C • Prisms, light sources and coloured pencils/pens • Newton Colour Wheel Video (FSD? activity only) • Instruction Sheet 7A (FSD? activity only) • String and thick cardboard/polystyrene circles (FSD? activity only)

NB: 'FSD? activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Classifying Organisms : Science : Year 6

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To recap ways of grouping organisms according to their characteristics.	Children will learn about some of the broad groups used to classify animals, then identify, sort or describe organisms within those groups according to some of their characteristics.	• Do children know that organisms can be grouped according to their characteristics? • Can children describe the characteristics of different classifications of animals? • Can children match animals to their group according to their characteristics?	• Slides • Worksheet 1A/1B • Classification Key • Animal Cards A/B • Challenge Cards A/B (FSD? activity only)
Lesson 2	To explore ways of distinguishing between organisms that have similar characteristics.	Children will consider ways in which animals which belong to the same broad group can be distinguished and further classified.	• Can children classify organisms according to broad characteristics? • Can children find ways to distinguish between organisms that are similar? • Can children use appropriate scientific vocabulary to describe organisms and their features?	• Slides • Worksheet 2A/2B • Insect Cards • Bird Cards • Mammal Cards • Flowering Plant Cards A/B (FSD? activity only)
Lesson 3	To be able to classify plants according to their characteristics.	Children will learn some ways in which plants are classified by botanists, then take photos, collect samples, or research, then classify plants.	• Do children know that plants can be sorted into groups according to their characteristics? • Can children explain the difference between vascular and non-vascular plants? • Can children explain the difference between flowering and non-flowering plants?	• Slides • Worksheet 3A/3B/3C/3D • Plant Cards - optional • Digital cameras - optional • Plant books, access to internet, etc.
Lesson 4	To find out about Carl Linnaeus and his classification system.	Children will learn about the development of Linnaeus' classification system, then use it to help them identify, classify, and answer questions about a number of different organisms.	• Do children know who Carl Linnaeus is and how he contributed to science? • Do children know that animals can be assigned to specific groups based on their characteristics? • Can children give reasons for why classification systems are important?	• Slides • Worksheet 4A/4B/4C • Animal Classification System - Examples of Reptiles • Animal Classification System - Examples of Mammals • Animal Families sheets (FSD? activity only) • Question Sheet (FSD? activity only) • Challenge Card (FSD? activity only)
Lesson 5	To explore what micro-organisms are and how they can be grouped.	Children will learn about some ways in which micro-organisms are classified, and what they need to survive. Following this, they may either write in-depth about micro-organisms, or conduct an experiment to determine what food a micro-organism prefers.	• Do children know what micro-organisms are? • Do children know that micro-organisms can be classified into groups? • Do children understand that some micro-organisms can be harmful and others can be helpful?	• Slides • Worksheet 5A/5B/5C/5D • Yeast Experiment Sheet (FSD? activity only) • Equipment and ingredients as listed on the Yeast Experiment sheet (FSD? activity only)
Lesson 6	To be able to identify and classify organisms in the local area.	Children will either look at a local environment, or study one in another country. They will identify and classify organisms in that environment.	• Can children identify a variety of different organisms found in their local environment? • Can children classify a variety of organisms appropriately? • Can children use a variety of sources of information to identify organisms they are unfamiliar with?	• Slides • Worksheet 6A/6B • Classification Cards • Clipboards • Magnifying glasses • Digital Cameras • Books, internet, posters, etc.

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Evolution and Inheritance : Science : Year 6

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	Children will learn about traits that are passed from one generation by the next, and consider ways in which in which some inherited characteristics may vary. They may then identify ways in which families or groups of people have some similar or shared characteristics.	• Do children recognise that animals produce offspring that are like themselves? • Can children explain why variation in offspring occurs?	• Slides • Worksheets 1A/1B/1C • Family Traits • Inherited Characteristics (FSD? activity only)
Lesson 2	To identify how animals and plants are adapted to suit their environment in different ways.	Children will learn about how random mutations may or may not be passed from one generation to the next, and how this process results in variation. They will then consider whether certain variations are advantageous, giving reasons why.	• Can children describe the conditions of an environment? • Can children identify characteristics which help an organism to be well suited to its environment? • Do children understand why different organisms in the same environment may have different characteristics?	• Slides • Worksheets 2A/2B/2C • Environment Posters • Advantageous Adaptations sheet (FSD? activity only)
Lesson 3	To understand that adaptation of plants and animals to suit their environment may lead to evolution.	Children will learn about how, if traits are advantageous to a species, they may be passed on and that evolution can occur. They may then undertake some of a range of activities where they will identify advantageous traits of species, learn more about evolutionary scientists, or sequence description of evolutionary processes.	• Do children know that not all inherited characteristics are advantageous? • Can children explain why advantageous characteristics are more likely to be passed from generation to generation? • Do children understand that whole species can evolve in this way?	• Slides • Task Charts 3A/3B/3C • Task Instructions • Task Resources A-F
Lesson 4	Evolution and Inheritance: Darwin	Children will learn about the contributions of ancient Greek scientists to our understanding of evolution. They will also study in greater depth the work of Carl Linnaeus and, particularly, that of Charles Darwin.	• Do children know that our understanding of process of evolution has developed over time? • Can children share what they have learned about the process of evolution? • Can children share what they have learned about the life and work of Charles Darwin?	• Slides • Worksheets 4A/4B/4C • Evolution Questions (FSD? activity only)
Lesson 5	To recognise that living things have changed over time and that a number of factors can affect a species' evolution.	Children will learn about mutations, and how external factors can affect the evolution of a species. They will then either summarise their learning about how the fossil record provides evidence of this, or summarise given technical vocabulary in their own words, drawing on prior knowledge and learning.	• Do children understand that a species can change over time due to mutations? • Do children understand that a species can change over time due to external factors such as competition from other species, disease or climate change?	• Slides • Worksheets 5A/5B/5C • The Fossil Record • Audio recorders (optional) • Evolution and Inheritance Game (FSD? activity only) • Die/Spinner, timer (FSD? activity only)
Lesson 6	To understand how humans have evolved over time, and how human behaviour can affect change in species over time.	Children will learn about human adaptations which allow us to thrive, then consider some impacts of human behaviour on other species. They will then either discuss these impacts in greater depths, or discuss some beliefs and misconceptions about evolution.	• Do children know that primate species (including humans) have changed over time? • Can children explain some ways in which human behaviour has changed the characteristics of other species? • Can children identify positive and negative consequences of this human behaviour?	• Slides • Worksheets 6A/6B/6C • Evolution Discussion Cards

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Changing Circuits : Science : Year 6

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To recap what electricity is and investigate static electricity.	In this initial lesson your class will recap their knowledge and understanding of electricity before discussing what static electricity is and how it can affect other things. They will either answer questions about electricity or investigate static electricity in different ways.	• Can children distinguish the differences between static and current electricity? • Can children describe what electrical charge is? • Can children give an example of where static electricity might be generated?	• Slides • Worksheet 1A • Question Cards 1A/1B • Balloons • Static Electricity Investigation Cards 1A (FSD? activity only) • Observation Sheet 1A (FSD? activity only) • Equipment listed on investigation cards (FSD? activity only)
Lesson 2	To recap our knowledge and understanding of circuits.	In this lesson the children will focus more on their understanding of circuits, including parallel circuits. They will build and explore circuits and their components, discussing why some circuits will work and others won't.	• Do children know what the main components of a circuit are? • Do children recognise what the difference between a series and a parallel circuit is? • Can children draw and/or construct working circuits?	• Slides • Worksheet 2A/2B/2C • Wires, batteries, bulbs/motors, switches (FSD? activity only) • Circuit Cards 2A (FSD? activity only) • Sticky notes
Lesson 3	To be able to recognise and use conventional symbols for circuits.	The children are challenged to match known circuit components to their corresponding circuit symbol. They will build circuits from diagrams and draw their own.	• Do children know why symbols are used to draw circuit diagrams? • Can children recognise the symbols for various common circuit components? • Can children use conventional circuit symbols to draw and/or construct circuits?	• Slides • Worksheet 3A/3B/3C • Circuit Cards 3A (FSD? activity only) • Wires, batteries, bulbs, buzzers, switches, motors (FSD? activity only) • Camera - optional (FSD? activity only)
Lesson 4	To investigate ways in which the brightness of a bulb or speed of a motor is changed.	Children investigate how the number of components and batteries affects the voltage in a circuit and so affects how brightly a bulb will shine. They will use their knowledge of circuit symbols to draw and discuss different circuits and suggest which may potentially overload the components, breaking them.	• Do children know that the brightness of a bulb or the speed of a motor can be changed in a circuit? • Do children know that the brightness of a bulb or speed of a motor depends on how much power is supplied to each component? • Do children know that bulbs and motors will blow out if too high a voltage is used?	• Slides • Worksheet 4A/4B/4C/4D • Question Cards 4A (FSD? activity only) • Batteries, bulbs/motors, wires, switches (FSD? activity only)
Lesson 5	To be able to plan, carry out and evaluate an experiment to see how changing the wire in a circuit affects the brightness of a bulb.	After investigating how the number of batteries and bulbs in a circuit affect bulb brightness, your class will plan and conduct an investigation to see how different wires can affect the brightness of a bulb. The children will look at improving an existing investigation as well as discussing anomalous results in experiments and how we can spot them.	• Do children know that the brightness of the bulb in a circuit can be altered by changing the wires? • Can children suggest questions to investigate, decide what to do and what equipment to use to test the question? • Can children make fair comparisons and draw conclusions from their results?	• Slides • Worksheet 5A/5B/5C • Batteries and bulbs • Different thicknesses of fuse wire • Worksheet 5D (FSD? activity only) • Results Sheet 5A (FSD? activity only)
Lesson 6	To create a simple device using a circuit.	In this final lesson the children will put their knowledge and understanding of electricity and circuits to the test as they make their own burglar alarms or other devices.	• Can children design a simple circuit for a purpose? • Are children able to build a working circuit for a purpose? • Can children use their knowledge of circuits and components such as switches to create more complex circuits?	• Slides • Challenge Card 6A/6B • Worksheet 6A • Device Cards 6A • Circuit equipment • Pegs, aluminium foil, craft wire, paper tubes, cardboard • Challenge Card 6C (FSD? activity only) • End of Unit Quiz

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