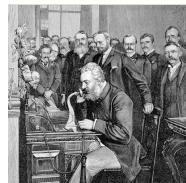


Achievers and Inventors : Topic Bundle : Year 3/4



DT

"British Inventors"

- 1 Investigating the invention of the telephone by Alexander Graham Bell
- 2 Exploring the invention of the world wide web by Tim Berners-Lee
- 3 Investigating the invention of reinforced concrete and considering its impact on the world
- 4 Exploring the invention of the mackintosh and investigating how to make materials waterproof
- 5 Reflecting in the impact inventions have on our lives

- Objectives:
- KS2 - use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
 - KS2 - generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
 - KS2 - understand how key events and individuals in design and technology have helped shape the world
 - KS2 - apply their understanding of how to strengthen, stiffen and reinforce more complex structures



Special People

"The Wright Brothers"

"Neil Armstrong"

"Amelia Earhart"

- 1 The Wright Brothers - considering the qualities that made the brothers an effective team
- 2 The Wright Brothers - working scientifically to find ways of improving a paper glider
- 3 The Wright Brothers - working scientifically to make, test and improve a powered glider
- 4 Amelia Earhart - exploring her aviation achievements around the world and investigating her disappearance
- 5 Neil Armstrong - investigating his early life and career
- 6 Neil Armstrong - exploring the mission of Apollo 11 and the first landing on the moon
- 7 Neil Armstrong - investigating the different effects of gravity on the moon and on Earth

- Objectives:
- KS2 - locate the world's countries, using maps to focus on Europe (including the location of Russia) and North and South America, concentrating on their environmental regions, key physical and human characteristics, countries, and major cities
 - KS2 - use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied
 - Year 3/4 - asking relevant questions and using different types of scientific enquiries to answer them
 - Year 3/4 - setting up simple practical enquiries, comparative and fair tests
 - Year 3/4 - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
 - Year 3/4 - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
 - Year 3/4 - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
 - Year 3/4 - using straightforward scientific evidence to answer questions or to support their findings



History

"British History Heroes"

- 1 Exploring the role William Wilberforce played in the abolition of slavery
- 2 Understanding how and why Elizabeth Fry helped change conditions for prisoners
- 3 Investigating Lord Shaftesbury's role in improving the working conditions of children
- 4 Exploring the role and influence of Florence Nightingale in modern nursing
- 5 Learning how Emmeline Pankhurst helped women win the right to vote in Britain
- 6 Investigating how Winston Churchill helped lead Britain to victory in WW2
- 7 Selecting, recording and presenting information about a British history hero

- Objectives:
- KS2 - a study of an aspect or theme in British history that extends pupils' chronological knowledge beyond 1066



Science

"What Do Scientists Do?"

- 1 Identifying the steps involved in the scientific method and learning about the different branches of science
- 2 Exploring how forensic scientists use fingerprints and carrying out a fingerprint investigation
- 3 Carrying out a comparative fair test as a microbiologist
- 4 Drawing conclusions from careful observations as a zoologist
- 5 Planning an investigation to answer an enquiry question as a botanist
- 6 Conducting a practical experiment, recording findings and drawing conclusions from data

- Objectives:
- Year 3/4 - asking relevant questions and using different types of scientific enquiries to answer them
 - Year 3/4 - setting up simple practical enquiries, comparative and fair tests
 - Year 3/4 - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
 - Year 3/4 - gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
 - Year 3/4 - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
 - Year 3/4 - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
 - Year 3/4 - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
 - Year 3/4 - identifying differences, similarities or changes related to simple scientific ideas and processes
 - Year 3/4 - using straightforward scientific evidence to answer questions or to support their findings
 - Year 3 - explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
 - Year 3 - identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
 - Year 4 - recognise that living things can be grouped in a variety of ways
 - Year 4 - explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
 - Year 4 - recognise that environments can change and that this can sometimes pose dangers to living things

Achievers and Inventors

Teacher's Topic Planner

Maths

Computing

Art

English

History

PlanBee 

"British History Heroes"

"The Wright Brothers"

Geography

PlanBee 

"Amelia Earhart"

RE

Science

"What Do Scientists Do?"

"Neil Armstrong"

PlanBee 

DT

"British Inventors"

PlanBee 

Languages

Music

Achievers and Inventors : Topic Bundle : Year 3/4

Teacher's notes:

DT

"British Inventors"



History

"British History Heroes"



Science

"What Do Scientists Do?"

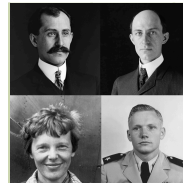


Special People

"The Wright Brothers"

"Neil Armstrong"

"Amelia Earhart"



British Inventors : DT : Year 3/4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To investigate the invention of the telephone.	Children are introduced to Alexander Graham Bell and his invention of the telephone. The children will discuss the invention and how it may have affected people's lives at the time and after recent developments e.g. the invention of the smartphone. The children use their evaluating skills when testing different string telephones or they have the opportunity to design a phone of the future.	<ul style="list-style-type: none"> • Can children reflect on how the invention of the telephone changed the way people lived? • Can children identify ways in which the telephone has changed to meet people's needs? • Are children able to evaluate a product's performance. 	<ul style="list-style-type: none"> • Slides • Worksheet 1A/1B/1C • String telephones • String Telephone Instruction Sheet • Photo Card 1A (FSD? activity only) • Worksheet 1D (FSD? activity only)
Lesson 2	To investigate the invention of the World Wide Web.	Children are asked to reflect on their use of the World Wide Web. They explore the differences between the internet and the WWW. They think about all the activities they do in their day-to-day lives which use these inventions after being introduced to the inventor Tim Berners-Lee. Children will take the time to explore and discuss the impact that this invention had on people's lives.	<ul style="list-style-type: none"> • Can children distinguish between the World Wide Web and the internet? • Can children reflect on how an invention has changed their lives? • Can children reflect on how an invention has changed the world? 	<ul style="list-style-type: none"> • Slides • Activity Cards 2A • Worksheet 2A/2B • Challenge Cards 2A (FSD? activity only)
Lesson 3	To explore how the invention of reinforced concrete works.	Children will investigate the word 'reinforce'. They are introduced to W B Wilkinson's invention of reinforced concrete. They look at different ways that reinforced concrete has been used to build record-breaking buildings and go on to investigate the different ways to reinforce modroc or paper.	<ul style="list-style-type: none"> • Can children define the word reinforced? • Can children describe what reinforced concrete is? • Are children able to suggest ways to reinforce a material? 	<ul style="list-style-type: none"> • Slides • Modroc • Cocktail sticks • Teacher Notes 3A • Worksheet 3A/3B • Challenge Cards 3A/3B (FSD? activity only) • Newspaper (FSD? activity only) • Tape (FSD? activity only)
Lesson 4	To investigate the invention of the mackintosh.	Children look into the invention of waterproof fabric and following invention of the mackintosh. They look into the desirable properties that the fabric needed to have in order to be made into a waterproof coat. They then attempt to waterproof a piece of paper in order to make an origami boat, thinking about the properties that the paper needs to retain e.g. flexibility, foldable etc.	<ul style="list-style-type: none"> • Can children pick out features of a material that make it suitable for a purpose? • Are children able to think of design criteria to suit a purpose? • Can children evaluate the success of a product based on a set of design criteria? 	<ul style="list-style-type: none"> • Slides • Mackintosh coat (if possible) • Instruction Sheet 4A • Worksheet 4A/4B/4C • Worksheet 4D (FSD? activity only) • Teacher Notes (FSD? activity only)
Lesson 5	To reflect on the impacts that inventions have had on our lives.	Children reflect on the inventions that they have investigated so far and are introduced to a few more inventors and their creations. The children are challenged to think about which inventions have changed people's lives the most. They discuss the inventions and how things changed when they were created and how they could change things as they are developed in the future.	<ul style="list-style-type: none"> • Can children name a British inventor and their creation? • Can children reflect on how inventions have changed the world? • Can children design a new creation intended to solve an everyday problem? 	<ul style="list-style-type: none"> • Slides • Worksheet 5A/5B • Invention Cards 5A • Challenge Cards 5A (FSD? activity only) • Worksheet 5C (FSD? activity only)

British History Heroes : History : Year 3/4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To know how William Wilberforce was influential in the abolition of the slave trade	In this first lesson, children will discuss their definitions of a hero. They will then be introduced to William Wilberforce, and explore how he became involved in the campaign to abolish the slave trade. Children will find out what the slave trade involved, and how and why Wilberforce and his supporters tried to stop it. In their independent work, children will create posters, leaflets and speeches to support Wilberforce's campaign. In the alternative activity, children hold a debate over the question: should slavery be abolished?	<ul style="list-style-type: none"> Do children know what a hero is? Do children know what the Transatlantic Slave Trade was? Can children explain why William Wilberforce is considered a hero by many people? 	<ul style="list-style-type: none"> Slides Worksheets 1A/1B/1C Transatlantic Slave Trade Information Sheet A/B For and Against Slavery Cards (FSD? activity only)
Lesson 2	To know how and why Elizabeth Fry improved conditions for prisoners	Children will first learn about the effects of the Industrial Revolution on the population of, and crime levels in, towns and cities, and will find out what prisons were like during this time. They will learn about the life of Elizabeth Fry, and how her charity work led to the improved treatment of prisoners. In their independent activities, children will further explore the causes and effects of Elizabeth's actions. Alternatively, they will be challenged to create a re-enactment of Elizabeth's visit to Newgate Prison.	<ul style="list-style-type: none"> Do children understand what prisons were like in the early 19th century? Can children explain some of the causes that led Elizabeth Fry to campaign for this reformation? Can children talk about some of the effects Elizabeth's campaign had on the conditions of prisons and the treatment of prisoners? 	<ul style="list-style-type: none"> Slides Cause and Effect Cards Life Events Cards Elizabeth Fry Information Sheet Worksheets 2A/2B/2C Visit to Newgate Prison Sheet (FSD? activity only) Challenge Cards (FSD? activity only)
Lesson 3	To know about Lord Shaftesbury's role in the improvement of working conditions for poor children	Children will find out about the working conditions of children who were employed in the coal mines, in factories, and as chimney sweeps during the Victorian era. They will learn about Lord Shaftesbury's role in trying to improve these conditions, and will look at three important laws that he helped to pass. They will also learn about ragged schools, and Lord Shaftesbury's beliefs about, and involvement in, them. In their independent activities, children will be encouraged to explore how different people may have felt about the passing of these laws at the time. In the alternative activity, children create a presentation using evidence packs about the working conditions of children in the mines.	<ul style="list-style-type: none"> Do children know what working life was like for children in the Victorian era? Can children discuss some of the laws that Lord Shaftesbury campaigned for? Can children give their own opinions of Lord Shaftesbury's work? 	<ul style="list-style-type: none"> Slides Worksheets 3A/3B Talk Show Instructions Sheet Talk Show Character Cards Mining Conditions Evidence Pack (FSD? activity only) Challenge Cards (FSD? activity only)
Lesson 4	To understand the influence of Florence Nightingale on modern-day nursing	Children will first look at and describe some pictures of modern-day hospitals. They will then explore what hospitals and nursing used to be like in the Victorian era. Children will find out about the early life of Florence Nightingale, and her decision to become a nurse. They will learn about the changes she made to a hospital she ran during the Crimean War, and how she continued to campaign to improve the hygiene and care in hospitals throughout her life. In their independent activities, children will apply their knowledge of the differences Florence Nightingale's work made to hospitals. In the alternative activity, they will complete a timeline of the important events in her life.	<ul style="list-style-type: none"> Can children talk about the life and work of Florence Nightingale? Do children know what hospitals and nursing were like before the influence of Florence Nightingale? Can children describe some of the changes Florence Nightingale made to hospitals and nursing? 	<ul style="list-style-type: none"> Slides Picture Cards Worksheets 4A/4B/4C Timeline Cards A/B (FSD? activity only) Florence Nightingale Timeline A/B/C (FSD? activity only) The Life of Florence Nightingale Sheet (FSD? activity only)
Lesson 5	To know how Emmeline Pankhurst helped women to win the right to vote	Children will learn about the role of women in the 19th century. They will understand how women began to speak out against their inequality with men, and in particular, how they wanted the right to vote. Children will find out about the work of Emmeline Pankhurst and the WSPU in gaining support for women's suffrage, as well as looking at the role of women during the First World War. In their independent activities, children will look in more detail at the different viewpoints of people at the time. In the alternative activity, children will compare the actions of the WSPU and the actions of women during the war, and decide which had the most influence on women winning the vote.	<ul style="list-style-type: none"> Do children understand the role of women in the 19th century? Can children explain why women wanted to vote? Can children discuss the events that led to women getting the vote? 	<ul style="list-style-type: none"> Slides Opinion Cards Challenge Cards & Character Cards Different Viewpoints Sheet How Women Won the Vote Sheet (FSD? activity only) Worksheet 5A (FSD? activity only)

British History Heroes : History : Year 3/4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 6	To know how Winston Churchill lead Great Britain to victory in the Second World War	Children will first find out about the life of Winston Churchill before he became Prime Minister. They will be encouraged to discuss his actions and how he might have been feeling at various points in his life. Children will look at Churchill's actions during the Second World War, and find out how victory was finally achieved in 1945. In their independent activities, they will arrange Churchill's life events in chronological order, and infer his feelings for each event. Alternatively, children will look at parts of Churchill's famous speeches, and use question prompts to discuss them.	<ul style="list-style-type: none"> Do children know about the life of Winston Churchill? Can they talk about his role in leading the country to victory in World War II? Can children infer how Churchill might have been feeling at various points in his life? 	<ul style="list-style-type: none"> Slides Life Event Cards A/B Feelings Word Bank Feelings Cards Feelings and Explanations Cards Churchill's Famous Speeches Sheet (FSD? activity only) Question Cards (FSD? activity only)
Lesson 7	To know how to select, record and present information	In this final lesson, children will review the information they have learnt about the British history heroes from the previous lessons, and then explore which one of them they think is the 'greatest' in terms of the significance of the changes they made that impact on our lives today. In their independent work, children will create posters, leaflets or presentations to inform and persuade others that their chosen 'hero' is the greatest. Alternatively, children are briefly introduced to six more British history heroes, and choose one to research in more depth.	<ul style="list-style-type: none"> Can children infer what life might have been like today if any of these British history heroes had not existed? Can children express an opinion on which hero they think has been the most influential? Can children select and record information to support their view? 	<ul style="list-style-type: none"> Slides What if...? Question Cards (Teaching Input) Challenge Cards A/B/C Picture Cards Worksheets 7A/7B More British History Heroes Cards (FSD? activity only) Question and Answer Sheet (FSD? activity only)



What Do Scientists Do? : Science : Year 3/4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To identify the steps involved in the scientific method.	Children are challenged to think about their own idea of what a scientist is and does before exploring the three different branches of science and what each branch involves. The children then look into the process of the scientific method for conducting investigations and experiments. They must think about what each step involves and why each one is important to the process. Alternatively they can research more information about different science careers.	<ul style="list-style-type: none"> Can children think about the qualities a scientist might need? Are children able to describe the three main branches of science? Can children give a brief description of the scientific method? 	<ul style="list-style-type: none"> Slides A5/6 plain paper Scientific Method Steps Worksheet 1A/1B/1C Access to the internet (FSD? activity only) Science Career Fact Cards (FSD? activity only) Challenge Cards 1A (FSD? activity only) Fact File Template (FSD? activity only)
Lesson 2	To generate suitable enquiry questions and make careful observations.	Children investigate the job of a forensic scientist by looking into the different things they analyse and research. The children will look closely at fingerprints and how they are unique to every individual. After discussing this, the children must think of some enquiry questions before using their observation skills to compare and analyse fingerprints.	<ul style="list-style-type: none"> Can children make careful observations of patterns, similarities and differences? Are children able to generate an enquiry question about fingerprints? Can children think of a simple hypothesis for their enquiry question? 	<ul style="list-style-type: none"> Slides Worksheet 2A/2B/2C Fingerprints Pattern Card Tape Magnifying glasses (optional) Suspect Sheet 2A (FSD? activity only) Fingerprints of willing teachers (FSD? activity only)
Lesson 3	To plan a comparative fair test.	Children explore the careers of microbiologists and pharmacologists who develop new medicines. They will investigate the process of testing a new medicine using a fair test and discuss the importance of fair testing. The children will learn the terms dependent, independent and control variables and use these to plan fair tests.	<ul style="list-style-type: none"> Can the children identify ways that an experiment is not a fair test? Are children able to plan a fair test? Are children able to identify dependent and independent variables? 	<ul style="list-style-type: none"> Slides Worksheet 3A/3B Experiment Card 1A Teacher Notes 3A (FSD? activity only) Worksheet 3C (FSD? activity only) Experiment equipment stated on Teacher Notes 3A (FSD? activity only)
Lesson 4	To draw conclusions from careful observations.	Using the context of a zoologist's study the children will practise their scientific observation skills based around birds. The children are challenged to identify expected behaviours, diets and possible habitats by making observations of the birds' beaks, wings and feet. Alternatively they can think like a zoologist and design an enclosure based on an animals' natural behaviours.	<ul style="list-style-type: none"> Can children make clear and careful observations? Can children draw conclusions from these observations? Are children able to classify animals based on their observations? 	<ul style="list-style-type: none"> Slides Worksheet 4A/4B/4C Bird Cards 4A Classification Card 4A Animal Information Cards 4A (FSD? activity only) Worksheet 4D (FSD? activity only)
Lesson 5	To create a hypothesis and plan an investigation to answer an enquiry question.	Children will investigate the role of botanists and how they have helped people from farmers to astronauts with their study and research. The children will think about what plants need in order to grow healthily and use this understanding to generate hypotheses, fair test procedures and results tables to record an investigation. Alternatively they can explore the plants around them and observe, group and classify non-flowering and flowering plants.	<ul style="list-style-type: none"> Can children predict the outcome to an investigation using existing knowledge and understanding? Are children able to think about how they will collect and record their data efficiently? Are children able to identify the dependent and independent variables in their investigation? 	<ul style="list-style-type: none"> Slides Worksheet 5A/5B/5C Three to five different liquids to water plants with e.g. water vinegar, fizzy drink, milk, cold coffee etc. Plants (already established plants reduces experiment time) Worksheet 5D (FSD? activity only) Clipboards (FSD? activity only) Tree ID Sheet 5A (FSD? activity only)
Lesson 6	To conduct a practical experiment, record findings in a table and draw conclusions from data.	Children will consolidate their understanding of the scientific method by planning an investigation based around the studies of sports scientists and physiologists. They will explore how muscles help us move and test how quick their reactions are.	<ul style="list-style-type: none"> Can children follow the scientific method in their investigation? Are children able to describe what their results show? Can children draw a conclusion, reflecting on their hypothesis? 	<ul style="list-style-type: none"> Slides Worksheet 6A/6B/6C Rulers Chalk (FSD? activity only) Metre rulers/tape measures (FSD? activity only)

Special People : The Wright Brothers, Amelia Earhart and Neil Armstrong : Year 3/4

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	The Wright Brothers To consider some qualities which made the Wright brothers an effective team.	Children will learn about how the brothers developed their aircraft, and consider the qualities which made them an effective team. They will then either work in pairs to 'invent' a product, or take part in team-building activities.	<ul style="list-style-type: none"> Can children suggest reasons why patience and perseverance are important qualities? Can children suggest reasons why explaining ideas to others is important? Can children work together effectively, and explain which qualities facilitate teamwork? 	<ul style="list-style-type: none"> Slides Challenge Card 1A/1B/1C Teacher's Notes (FSD... ? activity only) Drawing/Writing Frames (optional) Cue Cards (optional)
Lesson 2	The Wright Brothers To work scientifically, exploring ways of improving a paper glider.	Children will consider ways in which the brothers worked scientifically as they developed their aircraft. They will then explore ways in which a paper glider can be improved, working scientifically with a partner or in small groups.	<ul style="list-style-type: none"> Can children suggest ways in which they may work scientifically? Can children work scientifically while testing and improving a small-scale model? Can some children analyse statements made by others, using findings from tests to support their opinions of the veracity of these statements? 	<ul style="list-style-type: none"> Slides Worksheet 2A/2B Paper Glider Design 2A/2B/2C A variety of paper and card; scissors, sticky tape and glue; paper clips
Lesson 3	The Wright Brothers To work scientifically while making and testing a 'powered' glider, and while improving its flight.	Children will consider what it means to make a glider that has a 'stable' and 'consistent' flight pattern, and how they might improve, then test a glider design. They may then either make, improve and test paper gliders, or construct and test rubber band-powered model aircraft kits.	<ul style="list-style-type: none"> Can children ensure that their tests are 'fair'? Can children record measurements and note observations when conducting tests? Can children interpret their measurements and observations, making judgements and asking further questions 	<ul style="list-style-type: none"> Slides Worksheet 3A/3B Challenge Card 3 Hole punches; rubber bands; a variety of paper and card; scissors, sticky tape and glue; paper clips
Lesson 4	Amelia Earhart To find out about the life and achievements of Amelia Earhart	Children will find out about the early life and achievements of Amelia Earhart, using world maps to track the routes she took. They will then explore the route of her attempt to circumnavigate the globe, and find out what we know of this final flight.	<ul style="list-style-type: none"> Do children know who Amelia Earhart was? Can they explain the importance of her achievements? Can they express their own opinions and ideas? 	<ul style="list-style-type: none"> Slides Worksheet 1A/B/C Timeline Cards Life and Achievements Sheet Flight Information Log World Map Thought and Feelings Sheet Evidence Pack (FSD? activity only) Diary Sheet (FSD? activity only)
Lesson 5	Neil Armstrong To find out about the early life and career of Neil Armstrong	Children will learn who Neil Armstrong was. They will find out about where and when he was born, how his love of flying began, when he became an astronaut, and his first space mission on the Gemini.	<ul style="list-style-type: none"> Do children know why Neil Armstrong is famous? Can they recall some facts about his early life and career? Can children give their own opinion of space travel? 	<ul style="list-style-type: none"> Slides Worksheet 1A/1B/1C Information Sheet Interview Sheet (FSD? activity only)
Lesson 6	Neil Armstrong To explore the flight of Apollo 11 and the first Moon landing	Children will learn about the Apollo 11 mission to the Moon in detail. They will discuss the events and give their own opinions. Children will put themselves 'into the shoes' of Neil Armstrong and imagine what he was thinking and feeling in their independent work.	<ul style="list-style-type: none"> Can children recall who Neil Armstrong was? Can children talk about the Apollo 11 flight and Moon landing? Can children put themselves in the shoes of the astronauts and understand how they were feeling/what they were thinking? 	<ul style="list-style-type: none"> Slides Worksheet 2A/2B/2C Picture Cards Astronaut Name Tags (FSD? activity only)
Lesson 7	Neil Armstrong To explore the different effects of gravity on Earth and on the Moon	Children will begin to understand the force of gravity. They will relate this knowledge to the astronauts walking on the Moon, and conduct their own investigation to see how far they could jump on the Moon!	<ul style="list-style-type: none"> Are children developing an understanding of gravity? Do children know that the gravity on the Moon is different to that on Earth? Can children predict, plan and carry out an investigation? 	<ul style="list-style-type: none"> Slides Worksheet 3A/3B/3C Chalk/Masking tape Measuring tape/Metre stick Extension Sheet Instructions Sheet (FSD? activity only) Crater Picture cards (FSD? activity only) Trays/Flour/cocoa powder/plasticine (FSD? activity only)