

Frozen Kingdom



Year Group: 5/6

Cycle A

Geography

- identify the position and significance of latitude, longitude, Equator, Northern Hemisphere, Southern Hemisphere, the Tropics of Cancer and Capricorn, Arctic and Antarctic Circle, the Prime/Greenwich Meridian and time zones (including day and night)
- physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, and the water cycle

Computing

- Handling Data

Science

- Living things and their habitats
- Working Scientifically

Climate/Environment

- Impact of climate change on the ice caps; loss of habitat, rising sea levels. Melting permafrost and release of methane into the atmosphere.

Design and Technology:

- Building large scale shelters

Science

National Curriculum (Knowledge and Skills): Pupils should be taught to:

Living Things and Their Habitats

- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals
- give reasons for classifying plants and animals based on specific characteristics

Working Scientifically

- take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- identify scientific evidence that has been used to support or refute ideas or arguments
- report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations

Suggested Investigation Focus:

Investigation: Melting Polar Ice Caps

<https://www.science-sparks.com/melting-polar-ice-caps/>

Note: This investigation overlaps with the suggested investigation for the climate/environment link outlined in the Geography section – although two variations on the experiment are suggested. Teachers should choose either one, there is no need to do both.

Prior Learning

Forever Firs children working at ARE should already be able to:

- compare how things move on different surfaces
- notice that some forces need contact between two objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials
- describe magnets as having two poles
- predict whether two magnets will attract or repel each other, depending on which poles are facing

Key Vocabulary

Tier 1		Tier 2		Tier 3	
Plants	Water	measurement	classify	micro-	mammal
Animals	Ice	centimetres	characteristic	organisms	amphibian
Bird	Melt	millimetres	record	producer	reptile
Fish	Similar	water level	diagram	prey	invertebrate
Insect	Same	sea level	line graph	predator	arachnid
Warm	different	ice caps	evidence		
Hot		habitat	refute		
cold		temperatures	support		
		climate	findings		
		change	conclusions		
			causal		
			relationships		

Science Assessment

Children working below ARE	Children working towards ARE	Children working at ARE	Children working above ARE
 The logo for Firs Primary School is centered on the page. It features a stylized sun or flower icon on the left, composed of several overlapping semi-circular segments in shades of yellow and orange. To the right of the icon, the words "Firs", "Primary", and "School" are stacked vertically in a large, light blue, sans-serif font. The word "Firs" is the largest, followed by "Primary", and "School" is the smallest. Two short horizontal yellow lines are positioned below "Primary" and "School", one on each side, acting as decorative dashes.			

Geography

National Curriculum: Pupils should be taught about:

- identify the position and significance of latitude, longitude, Equator, Northern Hemisphere, Southern Hemisphere, the Tropics of Cancer and Capricorn, Arctic and Antarctic Circle, the Prime/ Greenwich Meridian and time zones (including day and night)
- physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, and the water cycle

Key Lines of Enquiry: The geography of the Arctic and Antarctic Circles

Climate/Environment

- What has been the impact of climate change on the ice caps including; loss of habitat, rising sea levels?
- What are the consequences of melting permafrost in relation to the release of methane into the atmosphere?

Teacher Resources for Information:

<https://www.worldwildlife.org/pages/why-are-glaciers-and-sea-ice-melting>

<https://www.nationalgeographic.com/environment/2019/08/arctic-permafrost-is-thawing-it-could-speed-up-climate-change-feature/>

Suggested Experiment:

<https://www.dynaminearth.co.uk/media/1238/sea-level-change-experiment.pdf> (demonstrates impact of melting ice on sea levels)

Lesson Resource (Powerpoint) – Permafrost

<https://www.tes.com/teaching-resource/impact-of-thawing-permafrost-in-the-arctic-12046926>

Age Related Subject Skills (Progression Guidance):

Year 5

Using maps

- Compare maps with aerial photographs
- Select a map for a specific purpose
- Begin to use atlases to find out other information (e.g. temperature)
- Find and recognise places on maps of different scales
- Use 8 figure compasses, begin to use 6 figure grid references.

Map knowledge

- Locate the world's countries, focus on North & South America
- Identify the position and significance of lines of longitude & latitude

Making maps

- Draw a variety of thematic maps based on their own data
- Draw a sketch map using symbols and a key,
- Use and recognise OS map symbols regularly

Year 6

Using maps

- Follow a short route on an OS map
- Describe the features shown on an OS map
- Use atlases to find out data about other places
- Use 8 figure compass and 6 figure grid reference accurately
- Use lines of longitude and latitude on maps

Map knowledge

- Locate the world's countries on a variety of maps, including
- the areas studied throughout the Key Stages

Making maps

- Draw plans of increasing complexity
- Begin to use and recognise atlas symbols

Prior Learning Forever Firs children working at ARE should already be able to:

Year 5

Using maps

- Follow a route on a large-scale map
- Locate places on a range of maps (variety of scales)
- Identify features on an aerial photograph, digital or computer map
- Begin to use 8 figure compass and four figure grid references to identify features on a map

Map knowledge

- Locate Europe on a large-scale map or globe,
- Name and locate countries in Europe (including

Year 6

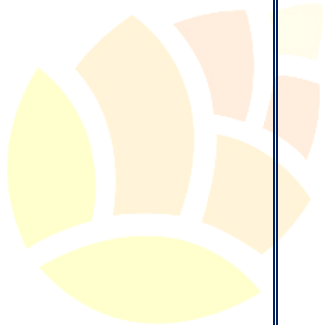
See Year 5 Progression Statements (above)

Russia) and their capitals cities			
<u>Making maps</u>			
<ul style="list-style-type: none"> Recognise and use OS map symbols, including completion of a key and understanding why it is important Draw a sketch map from a high viewpoint 			
Key Vocabulary			
Tier 1	Tier 2	Tier 3	
Day Night Rivers Mountains Rain Snow Sea Lake Cloud	Evaporate Vapor Condense Liquid	Latitude Longitude Equator Northern Hemisphere Southern Hemisphere Tropic of Cancer Tropic of Capricorn Arctic Circle Antarctic Circle Prime/Greenwich Meridian Time zone	Physical geography Water Cycle Precipitation Climate Zones Biomes



Geography Assessment

Children working below ARE	Children working towards ARE	Children working at ARE	Children working above ARE



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Design and Technology

National Curriculum:

Pupils should be taught to:

- generate, develop, model and communicate their ideas through discussion,
- select from and use a wider range of tools and equipment to perform practical tasks [e.g. cutting, shaping, joining and finishing], accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Key Line of Enquiry:

- Children will work in groups to build large scale shelters (using the outdoor environment if possible), these should then be tested and compared for strength, durability, water resistance and aesthetic appeal (*note: the EYFS have a variety of equipment that could be borrowed for this task.*)

Age Related Subject Skills (Progression Guidance):

Design

- Carry out research, using surveys, interviews, questionnaires and web-based resources
- Identify the needs, wants, preferences and values of particular individuals and groups
- Develop a simple design specification to guide their thinking
- Recognise when their products have to fulfil conflicting requirements
- Generate innovative ideas, drawing on research
- Make design decisions, taking account of constraints such as time, resources and cost
- Develop prototypes

Make

- Select tools and equipment suitable for the task
- Explain their choice of tools and equipment in relation to the skills and techniques they will be using
- Select materials and components suitable for the task
- Explain their choice of materials and components according to functional properties and aesthetic qualities
- Order the main stages of making
- Produce detailed lists of tools, equipment and materials that they need
- Follow procedures for safety
- Use a wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components
- Accurately measure to nearest mm, mark out, cut and shape materials and components
- Accurately assemble, join and combine materials/ components

Evaluate

- Identify the strengths and weaknesses of their ideas and products
- Consider the views of others, including intended users, to improve their work
- Refer back to their design criteria as they design and make
- Use their design criteria to evaluate their completed products
- Investigate - how well products have been designed, how well products have been made, why materials have been chosen, what methods of construction have been used, how well products work, how well products achieve their purposes and how well products meet user needs and wants
- Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
- Compare their ideas and products to their original design specification
- Investigate - how much products cost to make, how innovative products are and how sustainable the materials in products are

- Accurately apply a range of finishing techniques, including those from art and design
- Use techniques that involve a number of steps
- Demonstrate resourcefulness, e.g. make refinements

Prior Learning

Forever Firs children working at ARE in Year 5 and 6 should already be able to:

Design

- Gather information about the needs and wants of particular individuals and groups
- Develop their own design criteria and use these to inform their ideas
- Research designs
- Share and clarify ideas through discussion Model their ideas using prototypes and pattern pieces
- Use annotated sketches, cross-sectional drawings and diagrams
- Use computer-aided design

Make

- Measure, mark out, cut and shape materials and components with some accuracy
- Assemble, join and combine materials and components with some accuracy apply a range of finishing techniques, include those from art and design, with some accuracy

Evaluate

- Identify the strengths and weaknesses of their ideas and products
- Consider the views of others, including intended users, to improve their work
- Investigate - who designed and made the products, where products were designed and made, when products were designed and made and whether products can be recycled or reused

Key Vocabulary

Tier 1

tools
cutting
joining

Tier 2

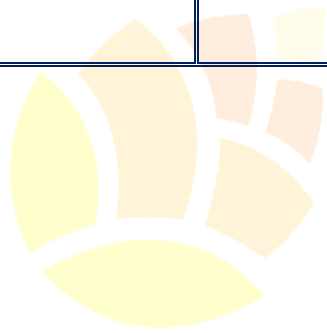
communicate
discuss
equipment
materials
functional
strengthen
stiffen
reinforce
structure
shelter

Tier 3

design criteria
weatherproof
waterproof
water resistant
insulating

Design and Technology Assessment

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Computing

National Curriculum:

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

Computing Strand: Handling Data

Topic Links: To create a database in Textease Database using knowledge of living things and their habitats

Age Related Subject Skills (Progression Guidance - DDAT):

- Modelling:* Pupils learn how to use a spreadsheet to model data
- Working with data:* Pupils learn to search, sort and graph information

Upper Key Stage 2

- | | |
|--|--|
| <ul style="list-style-type: none"> Choose an appropriate programme to represent information | <ul style="list-style-type: none"> To know when a database might be useful Create a database that enables you to search through entries using fields |
|--|--|

Other Key Areas of Learning:

- <https://www.youtube.com/watch?v=4-mkYMe5D6M>
- <https://www.educationquizzes.com/ks2/ict/databases/>
- To know how an electronic database works and the advantages over a manual database
<https://teachcomputing.org/curriculum/key-stage-2/data-and-information-flat-file-databases/lesson-1-creating-a-paper-based-database>
- To choose what fields to include: Animal; Classification; Fur; Swim; Legs; Location etc.
- To research information about different animals and import information in to the database
- To answer 'queries' using a database
- To write instructions of how to create a database
- To be able to use key vocabulary about databases <https://www.schoolsofkingedwardvi.co.uk/ks2-computing-information-technology-6-databases/> https://firsestateprimary-my.sharepoint.com/:p/g/personal/lbailey_firprimary_derby_sch_uk/EVBbjANwmExEIEndKxhitQUBiojD6QsGqaYlr6q8xutr1g?e=bVjX9v

Prior Learning

Forever Firs children working at ARE should already be able to:

- Sort at least 3 pictures using a branching database
- Use a branch database to answer questions
- Make a branch database with at least 4 pictures.
- create and use a branching database to organise, reorganise and analyse information

Key Vocabulary

Tier 1		Tier 2		Tier 3	
Information	Alphabetically	Database	Data	Record	
Sort	Store	Input		Field	
Question	Organise			Query	
	Search				

Computing Assessment

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