

Ashwell Primary School

Computing Curriculum

Data Handling Progression - Knowledge & Skills Organiser



Reception (EYFS) – Data Handling

Core Knowledge / skills to be acquired:

Introduction to data (Reception)

- To know that sorting objects into various categories can help you locate information.
- To know that using yes/no questions to find an answer is a branching database.
- To know that a pictogram is a way of showing information.

Key Vocabulary:

Introduction to data

altogether, bigger than, branch database, categorise, category, colour, collect, column, count, data, describe, divide, equal, graph, group, height, in total, least popular, length, less, more, most popular, pattern, pictogram, record, row, share, size, smaller than, sort, square, texture, thicker than, thinner than, weight

Curriculum Enrichment / Cultural Capital Opportunities / key questions

Prior knowledge / skills this builds on:

Communication and Language

- Articulate their thoughts and ideas in well-formed sentences.
- Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.
- **ELG:** Listening, Attention and Understanding> Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions.
- **ELG:** Listening, Attention and Understanding> Make comments about what they have heard and ask questions to clarify their understanding.
- **ELG:** Speaking, Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.

Mathematics

- **ELG: Numerical Patterns>** Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
- Count objects, actions, and sounds. Subitise. Count beyond 10. Compare numbers. Understand the 'one more than/ one less than' relationship between consecutive numbers.
- Continue, copy, and create repeating patterns.
- Compare length, weight, and capacity.

What comes next:

Introduction to data (Year 1)

- To know how that charts and pictograms can be created using a computer.
- To understand that a branching database is a way of classifying a group of objects.
- To know that computers understand different types of 'input'.

Year 1 – Data Handling

<p>Core Knowledge / skills to be acquired:</p> <p>Introduction to data (Year 1)</p> <ul style="list-style-type: none"> ▪ To know how that charts and pictograms can be created using a computer. ▪ To understand that a branching database is a way of classifying a group of objects. ▪ To know that computers understand different types of 'input'. 	<p>Key Vocabulary:</p> <p>Introduction to data bar chart, block graph, branching database, categorise, chart, click and drag, compare, count, data, data collection, data record, data representation, edit, input, keyboard, line graph, mouse, information, label, pictogram, pie chart, process, record, resize, sort, table, tally, values</p>
<p>Curriculum Enrichment / Cultural Capital Opportunities / key questions</p> <ul style="list-style-type: none"> ▪ How does a Pictogram show information? 	
<p>Prior knowledge / skills this builds on:</p> <p>Introduction to data (Reception)</p> <ul style="list-style-type: none"> ▪ To know that sorting objects into various categories can help you locate information. ▪ To know that using yes/no questions to find an answer is a branching database. ▪ To know that a pictogram is a way of showing information. 	<p>What comes next:</p> <p>International Space Station (Year 2)</p> <ul style="list-style-type: none"> ▪ To understand that you can enter simple data into a spreadsheet. ▪ To understand what steps you need to take to create an algorithm. ▪ To know what data to use to answer certain questions. ▪ To know that computers can be used to monitor supplies.

Year 2 – Data Handling

<p>Core Knowledge / skills to be acquired:</p> <p>International Space Station (Year 2)</p> <ul style="list-style-type: none"> ▪ To understand that you can enter simple data into a spreadsheet. ▪ To understand what steps you need to take to create an algorithm. ▪ To know what data to use to answer certain questions. ▪ To know that computers can be used to monitor supplies. 	<p>Key Vocabulary:</p> <p>International Space Station algorithm, astronaut, column, data, digital content, essential, experiment, Goldilocks zone, interactive map, International Space Station, input, monitor, row, satellite, sensor, space, spreadsheet, survival, temperature, thermometer.</p>
<p>Curriculum Enrichment / Cultural Capital Opportunities / key questions</p> <ul style="list-style-type: none"> ▪ How does a Pictogram show information? ▪ How can a database help organise information? 	
<p>Prior knowledge / skills this builds on:</p> <p>Introduction to data (Year 1)</p> <ul style="list-style-type: none"> ▪ To know how that charts and pictograms can be created using a computer. ▪ To understand that a branching database is a way of classifying a group of objects. ▪ To know that computers understand different types of 'input'. 	<p>What comes next:</p> <p>Comparisons cards databases (Year 3)</p> <ul style="list-style-type: none"> ▪ To know that a database is a collection of data stored in a logical, structured and orderly manner. ▪ To know that computer databases can be useful for sorting and filtering data. ▪ To know that different visual representations of data can be made on a computer.

Year 3 – Data Handling

<p>Core Knowledge / skills to be acquired:</p> <p>Comparisons cards databases (Year 3)</p> <ul style="list-style-type: none"> ▪ To know that a database is a collection of data stored in a logical, structured, and orderly manner. ▪ To know that computer databases can be useful for sorting and filtering data. ▪ To know that different visual representations of data can be made on a computer. 	<p>Key Vocabulary:</p> <p>Comparisons cards databases categorise, category, chart, data, database, Excel, fields, filter, graph, information, interpret, PDF, questionnaire, record, representation, sort, spreadsheet.</p>
<p>Curriculum Enrichment / Cultural Capital Opportunities / key questions</p> <ul style="list-style-type: none"> ▪ How is information organised in a binary tree? How can a database help organise information? 	
<p>Prior knowledge / skills this builds on:</p> <p>International Space Station (Year 2)</p> <ul style="list-style-type: none"> ▪ To understand that you can enter simple data into a spreadsheet. ▪ To understand what steps you need to take to create an algorithm. ▪ To know what data to use to answer certain questions. ▪ To know that computers can be used to monitor supplies. 	<p>What comes next:</p> <p>Investigating weather (Year 4)</p> <ul style="list-style-type: none"> ▪ To know that computers can use different forms of input to sense the world around them so that they can record and respond to data. ▪ To know that a weather machine is an automated machine that responds to sensor data. ▪ To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.

Year 4 – Data Handling

<p>Core Knowledge / skills to be acquired:</p> <p>Investigating weather (Year 4)</p> <ul style="list-style-type: none"> ▪ To know that computers can use different forms of input to sense the world around them so that they can record and respond to data. ▪ To know that a weather machine is an automated machine that responds to sensor data. ▪ To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films. 	<p>Key Vocabulary:</p> <p>Investigating weather accurate, climate zone, condensation, cylinder, degrees Celsius, evaporation, extreme weather, filming, forecast, heat sensor, lightning, measurement, pinwheel, presenter, rain, satellite, script, sensor data, solar panel, temperature, thermometer, tornado, weather, weather forecast, wind speed</p>
<p>Curriculum Enrichment / Cultural Capital Opportunities / key questions</p> <ul style="list-style-type: none"> ▪ How can a database help organise information? What is meant by data? What is a database? What is a branching database? 	
<p>Prior knowledge / skills this builds on:</p> <p>Comparisons cards databases (Year 3)</p> <ul style="list-style-type: none"> ▪ To know that a database is a collection of data stored in a logical, structured, and orderly manner. ▪ To know that computer databases can be useful for sorting and filtering data. ▪ To know that different visual representations of data can be made on a computer. 	<p>What comes next:</p> <p>Mars Rover 1 (Year 5)</p> <ul style="list-style-type: none"> ▪ To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock. ▪ To know what numbers using binary code look like and be able to identify how messages can be sent in this format. ▪ To understand that RAM is Random Access Memory and acts as the computer's working memory. ▪ To know what simple operations can be used to calculate bit patterns.

Year 5 – Data Handling

Core Knowledge / skills to be acquired:

Mars Rover 1 (Year 5)

- To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.
- To know what numbers using binary code look like and be able to identify how messages can be sent in this format.
- To understand that RAM is Random Access Memory and acts as the computer's working memory.
- To know what simple operations can be used to calculate bit patterns.

Key Vocabulary:

Mars Rover 1

8-bit binary, addition, ASCII, binary code, boolean, byte, CPU, data, data transmission, decimal numbers, discovery, distance, Hexadecimal, input, Mars Rover, the Moon, numerical data, output, planet, radio signal, RAM, scientist, sequence, signal, simulation, space, subtraction.

Curriculum Enrichment / Cultural Capital Opportunities / key questions

- How can a database help organise information? What is meant by data? What is a database? What is a branching database?

Prior knowledge / skills this builds on:

Investigating weather (Year 4)

- To know that computers can use different forms of input to sense the world around them so that they can record and respond to data.
- To know that a weather machine is an automated machine that responds to sensor data.
- To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.

What comes next:

Big Data 1

- To know that data contained within barcodes and QR codes can be used by computers.
- To know that infrared waves are a way of transmitting data.
- To know that Radio Frequency Identification (RFID) is a more private way of transmitting data.
- To know that data is often encrypted so that even if it is stolen it is not useful to the thief.

Big Data 2

- To know that data can become corrupted within a network, but this is less likely to happen if it is sent in 'packets'.
- To know that devices or that are not updated are most vulnerable to hackers.
- To know the difference between mobile data and WiFi.

Year 6 – Data Handling

Core Knowledge / skills to be acquired:

Big Data 1

- To know that data contained within barcodes and QR codes can be used by computers.
- To know that infrared waves are a way of transmitting data.
- To know that Radio Frequency Identification (RFID) is a more private way of transmitting data.
- To know that data is often encrypted so that even if it is stolen it is not useful to the thief.

Big Data 2

- To know that data can become corrupted within a network, but this is less likely to happen if it is sent in 'packets'.
- To know that devices or that are not updated are most vulnerable to hackers.
- To know the difference between mobile data and Wi-Fi.

Key Vocabulary:

Big Data 1

algorithm, **barcode**, boolean, brand, **chip**, **commuter**, **contactless**, data, **encrypt**, **infrared**, **proximity**, QR code, **QR scanner**, radio waves, **RFID**, signal, spreadsheet, **systems analyst**, **transmission**, wireless.

Big Data 2

Big Data, bluetooth, corrupted, data, **energy**, **GPS**, **improve**, infrared, **Internet of Things**, personal, privacy, QR codes, **revolution**, RFID, **SIM**, simulation, **Smart city**, **Smart school**, stop motion, **threat**, wifi, wireless.

Curriculum Enrichment / Cultural Capital Opportunities / key questions

- How can a database help organise information? What is meant by data? What is a database? What is a branching database?

Prior knowledge / skills this builds on:

Mars Rover 1 (Year 5)

- To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.
- To know what numbers using binary code look like and be able to identify how messages can be sent in this format.
- To understand that RAM is Random Access Memory and acts as the computer's working memory.
- To know what simple operations can be used to calculate bit patterns.

What comes next:

Key Stage 3 Computer Science