Curriculum Coherence – Year 3 Computing

Term 3	**Graphing 3.8/Branching databases 3.6**	**Programming with Scratch**

Values: respect, responsibility, co-operation, friendship, understanding

Prior Learning: used technology to create and present my ideas. - save work and retrieve it again -add backgrounds, copy and paste pages, combine a mixture of text and images to share my ideas and learning, evaluate my work and improve its effectiveness, design and write algorithms, design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

INTENT

KNOWLEDGE

Graphing/Branching Databases

-How graphs are structured and how they can be used to organise data
-Know how fields are created and why
-How to create a variety of graphs and charts
-Solve a maths investigation and present the results in a range of graphical formats
-Know how branching databases can be used to identify or classify data

Programming with Scratch

-How inputs can control when code runs
-How blocks can be sequenced to achieve an outcome
-How repetition loops can be used to simplify code

CORE VOCABULARY

Graphing

Graph, field, data, bar chart, block graph, line graph

Branching Databases

Data, database, identify, closed questions, answer card, choice button

Scratch

Tinker, app, coding language, algorithm, sequence, project, stage, sprite, background, scripts, costumes, run, motion, looks, event, control, blocks, edit, debug, repeat, selection, input, loops, decomposing

HIGH LEVEL VOCABULARLY

Interpret data, most popular, least popular, binary trees, loops, classify, decomposing

SKILLS

Graphs

To navigate around a graph
To add data to fields
To collect data
Save and open graphs
To provide a title to my graph
To interpret my data

Branching Databases

Using a branching database to identify something
Creating Yes/No questions to split data sets roughly in half
Designing their own branching database

IMPLEMENTATION

ACTIVITIES

Graphing unit 3.8

-Open 2Graph and tinker with it.
-Identify the information presented on the graph and associated table
-Identify the features of the 2Graph by clicking on them
-Collect data as a class on their favourite colour
-Use data to create class graph
-Use the graph to interpret to understand what the results show us
-Decide a class what data they would like to collect
-Use 2Graph to represent the information

Branching Databases unit 3.6

-(unplugged) Play Guess Who as a class. Note questions, cross out characters as they go to show how each yes/no question helps to *identify* the piece of data needed.
-(unplugged) use a branching database to identify data e.g. animal/tree etc. *How is it structured?*
-create a class database for fruits using 2Question.
-create their own branching databases characters/superheroes etc by *classifying* the data until each branch ends in one possibility.
What data are you sorting? What yes/no questions can you ask to split them into roughly 2 equal groups each time?

Programming with Scratch

-Tinker with Scratch. Challenges: change *costumes* and the colour of items of clothing or accessories; change *sprite*; import a *background* to change when clicked.
-(unplugged) Play Programmer Says with simple instructions, chn complete activity only upon "Run program" command.
-Whole class decompose features (in THREAD books) https://scratch.mit.edu/projects/13165886/ : background, car, direction keys, move key, pen up, pen down, clear.
-Individual challenges: change sprite to a car; add blocks to make it move when a key is pressed; add direction blocks; create a background. Extension: write instructions (separate sprite).
-(unplugged in books) Introduce *loops*: repeat 5 (wake up, go to school, go home). Add weekend/half term to make own code.
-Music Machine project. Paint sound buttons; code to make sounds; include loops. Share and evaluate

IMPACT

OUTCOMES

Graphing/Branching Databases

PUPILS will know

-What is data?
-What is the structure of graphs?
-What are the advantages of using graphs?
-What is a branching database and how can they be used to classify and identify objects?

will be able to

-Tinker with different programs that can be used to organise and analyse data
-Use a graphs to collect and organise data –
-Create a variety of graphs and charts to present data and information; analyse and evaluate these.
-Make a branching database
-Use a branching database to classify/identify data.
-Use an appropriate tool to share my work online

will understand

I can talk about the different ways data can be organised.
I can search a ready-made database to answer questions.
I can collect data help me answer a question.
I can add to a database.

Programming with Scratch

PUPILS will know

-how can we create a simple sequence in block programming?
-what do different blocks do and how are they organised?
-how can events blocks can be used to signal when code will run?
-how can control blocks affect how a sequence runs?

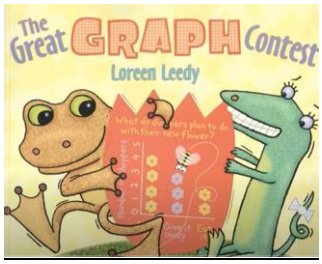
Will be able to

-tinker with Scratch
-design and create their own themed project
-evaluate their own and others' projects
- keep testing their program, recognise when to debug it.
- use repeat commands.
-describe the algorithm for a simple task.
-evaluate their work and improve its effectiveness

will understand

I can break an open-ended problem up into smaller parts.

Scratch Saving into a networked folder, appropriate file name; retrieving saved file. Decomposing features Adding appropriate blocks Create a project with loops Use wait blocks in a sequence Evaluate their animations	Scratch animations. *What do they like? Why? How could it be made even better?* -(unplugged) What code blocks would be needed to create a simple conversation between 2 characters? (e.g. Knock Knock joke). Introduce *wait* control block (for turn taking). Plan their own joke in pairs. -Import 2 sprites and create their conversation on Scratch. Share and evaluate. *Does their conversation make sense? Do their sprites talk at different times? Is there the right amount of time to read their speech bubbles?*	I can put programming commands into a sequence to achieve a specific outcome. **NEXT STEPS IN LEARNING** Scratch (Year 4, Autumn 2) Logo programming (Year 4, Summer 2)

READING OPPORTUNITIES  	**Key Questions** What does this data tell us? How will add your data to the fields? What are the features of the graph? What colour was most/least popular? How do we know? What does the branching database tell us? What does classifying mean? How can you change *costumes* and the colour of items of clothing or accessories on scratch? What instructions could you write for your sprite?	**NC OBJECTIVES:** Pupils should be taught to: ♣ design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts ♣ use sequence, selection, and repetition in programs; work with variables and various forms of input and output ♣ use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs ♣ understand computer networks including the internet and the opportunities they offer for communication and collaboration ♣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

CHALLENGE: Graphing - Children demonstrating greater depth will select the most appropriate graph format to present their data and explain their reasoning behind this (Unit 3.8 Lesson 1). They will experiment with different types of charts and determine the most suitable. **Branching Databases -** Children demonstrating greater depth understand the specific characteristics of a branching database and its application in real world situations. **Scratch –** Children will design and create their own themed project and evaluate their own and others' projects. They will keep testing their program and recognise when to debug it. **SUPPORT: Graphing -** With support throughout, children use 2Graph to enter a simple data range on a limited number of fields. Children can then present their data as a simple bar chart. **Branching Databases –** With support they will collect, sort, and present their information using the paper resources. **Scratch –** With support children will design and create their own themed project and evaluate their own and others' projects. They will testing their program and with support recognise when to debug it.	**ASSESSMENT OPPORTUNITIES:** Can they collect data? Can they identify the features of a graph? Can they input data into fields? Can they interpret data? Can they draw conclusions from the branching database? Can they explain what classifying means? Can they change *costumes* and the colour of items of clothing or accessories on scratch? Can they write instructions for the sprite?

PREPARATION FOR ADULTHOOD:

Chn will recognise common uses of information technology beyond school i.e. collecting data and presenting it in graphs and interpretating the data
Chn will understand how objects can be classified using branching databases by segmenting information
Chn will know how to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

LINKS TO Curriculum Areas	**SMSC**
Maths/Science – Data handling Science - classification	**Spiritual –**By understanding how technology can be used to collect data and is it always needed. How information can be interpreted and what it tells us. **Moral –** Using technologies to collect and gather information for specific purposes. What data should or should not be collected. **Social –** Using data to discuss conclusions by collaboration and improving ways of working. **Cultural -** Promoting an understanding of the history and wonder of technology. How was data collected around the world before computers were invented.