Castle View Primary School Computing Curriculum

Year 1 – Technology Around Us

Prior learning:
As this is a Year 1 unit, no prior knowledge is assumed. This unit progresses students' knowledge and understanding of technology and how they interact with it in school. Learners will build their knowledge of parts of a computer and develop the basic skills needed to effectively use a computer keyboard and mouse. This unit directly precedes the Y2 Computer systems and networks unit, IT around us.

Key vocabulary:
technology, mouse, keyboard, click, computer, typing, save, icon, program, file, delete, trackpad, screen, double-click.

National Curriculum Objectives:
- Recognise common uses of information technology beyond school.
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Unit Objectives:
To explain technology as something that helps us.
To name the main parts of a computer.
To use a mouse to click and drag.
To delete letters using a keyboard.
To identify rules to keep us safe when using technology in and beyond the home.

Assessment Questions:
What is technology?
What are the main parts of a computer?
What can you use a mouse for?
What can you use a keyboard for?
What is an icon?
How can we keep ourselves safe when using technology?

Castle View Primary School Computing Curriculum

Year 1 – Digital Painting

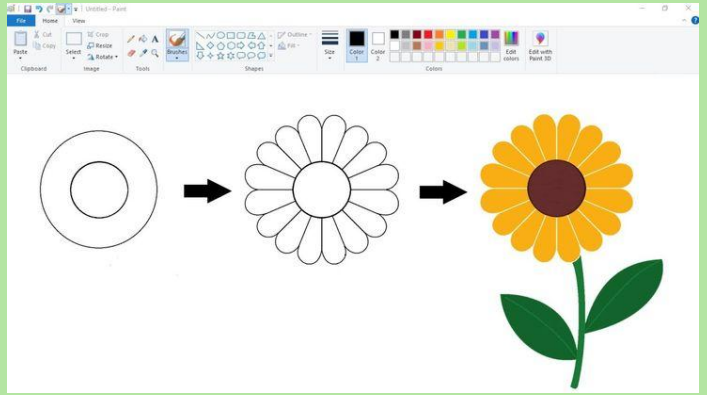
Prior learning:
Learners will have completed the unit 'Technology Around Us' and will have a grasp how to switch their device on, usernames and passwords. Learners will also understand how to use a mouse and keyboard.

Key vocabulary:
paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers

National Curriculum Objectives:
- Use technology purposefully to create, organise, store, manipulate, and retrieve digital content

Unit Objectives:
To describe what different freehand tools do.
To use the shape tool and the line tool.
To make careful choices when painting a digital picture.
To explain why the tools were chosen.
To use a computer on my own to paint a picture.
To compare painting a picture on a computer and on paper.

Assessment Questions:
What is a tool on a computer programme?
What is does the line tool do?
What does the shape tool do?
What does the fill tool do?
Why are tools helpful?



Castle View Primary School Computing Curriculum

Year 1 – Moving a Robot

Prior learning:
As this is a Year 1 programming unit, no prior knowledge is assumed. Learners will have knowledge of giving and following instructions and will progress this to giving instructions to a robot.

Key vocabulary:
Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program.

National Curriculum Objectives:
- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.
- Create and debug simple programs.
- Use logical reasoning to predict the behaviour of simple programs.
- Recognise common uses of information technology beyond school.

Unit Objectives:
To explain what a given command will do.
To combine 'forwards' and 'backwards' commands to make a sequence.
To combine four direction commands to make a sequence.
To plan a simple program.
To find more than one solution to a problem.

Assessment Questions:
What will happen when the forward button is pressed on a bee-bot?
What does the turn button do on a bee-bot?
What happens when you press 'clear memory' on a bee-bot?
What are the four directions on a bee-bot?

Castle View Primary School Computing Curriculum

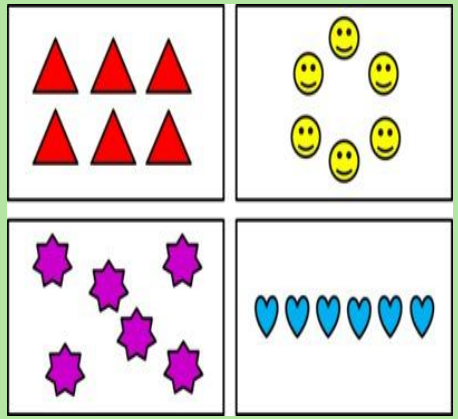
Year 1 – Grouping Data

Prior learning:
This unit will introduce learners to data and information. It will introduce learners to the concept of labelling and grouping objects based on their properties. Learners will develop their understanding that objects can be given labels, which is fundamental to their future learning concerning databases and spreadsheets. In addition, learners will begin to improve their ability to use dragging and dropping skills on a device. Following this unit, in year 2, learners will present data graphically in pictograms.

Key vocabulary:
object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same

National Curriculum Objectives:
- Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Unit Objectives:
To label objects.
To identify objects that can be counted.
To describe objects in different ways.
To count objects with the same properties.
To compare groups of objects.
To answer questions about groups of objects.



Assessment Questions:
What are objects in computing?
What kind of objects can be counted?
How can you describe objects?
What can be the same on objects?
What can be different on objects?

Castle View Primary School Computing Curriculum

Year 1 – Digital Writing

Prior learning:
The learners will continue to develop their ability to find and use the keys on a keyboard in order to create digital content. The learners are then introduced to manipulating the resulting text, making cosmetic changes, and justifying their reason for making these changes. Following this unit, learners will further develop their digital writing skills in the Year 3 – 'Desktop publishing' unit and the Year 6 – 'Web page development' unit.

Key vocabulary:
word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing.

National Curriculum Objectives:
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Unit Objectives:
To use a computer to write.
To add and remove text on a computer.
To identify that the look of text can be changed on a computer.
To make careful choices when changing text.
To explain why tools were chosen and used.
To compare typing on a computer to writing on paper.

Assessment Questions:
How can we use a computer to help us write?
How can we change text on a computer?
What tools can be used?
What are the differences to writing on a computer and writing on paper?

Castle View Primary School Computing Curriculum

Year 1 – Programming Animations

Prior learning:
This unit progresses learners' knowledge and understanding of programming and follows on from 'Programming A – Moving a robot', where children will have learned to program a floor robot using instructions.

Key vocabulary:
ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design.

National Curriculum Objectives:
- Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
- Create and debug simple programs
- Use logical reasoning to predict the behaviour of simple programs.

Unit Objectives:
To choose a command for a given purpose.
To show that a series of commands can be joined together.
To identify the effect of changing a value.
To explain that each sprite has its own instructions.
To design the parts of a project.
To use an algorithm to create a program.

Assessment Questions:
What is a command?
What does it mean to 'reset'?
What can happen when commands are joined together?
What is a sprite?
What is an algorithm?

Castle View Primary School Computing Curriculum

Year 2 – Information Technology Around Us

Prior learning:
This unit progresses learners' understanding of technology and how they interact with it. They will develop this understanding to become familiar with the term information technology and will be able to identify common features of IT. This unit also builds on the learners' understanding of using technology safely and responsibly.

Key vocabulary:
Information technology (IT), computer, barcode, scanner/scan

National Curriculum Objectives:
- Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
- Recognise common uses of information technology beyond school
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

Unit Objectives:
To recognise the uses and features of information technology.
To identify the used of information technology in the school.
To identify information technology beyond the school.
To explain how information technology helps us.
To explain how to use information technology safely.
To recognise that choices are made when using information technology.

Assessment Questions:
How can information technology help us?
Name 3 different types of information technology in the school?
Name 3 different types of information technology used beyond school?
When should we use information technology to help us?

Castle View Primary School Computing Curriculum

Year 2 – Digital Photography

Prior learning:
This unit begins the learners' understanding of how photos are captured and can be manipulated for different purposes. Following this unit, learners will develop their photo editing skills in Year 4.

Key vocabulary:
device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting,

National Curriculum Objectives:
- Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
- Recognise common uses of information technology beyond school
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

National Curriculum Objectives and *Unit Objectives:* :
To use a digital device to take a photograph.
To make choices when taking a photograph.
To describe what makes a good photograph.
To decide how photographs can be improved.
To use tools to change an images
To recognise that photos can be changed.

Assessment Questions:
Why is it important to know that photographs can be changed?
How we change a photograph?
What is a photographer?
What does the 'focus' tool do when taking a picture?

Castle View Primary School Computing Curriculum

Year 2 – Robot Algorithms

Prior learning:
In advance of the lessons in this Year 2 unit, learners will have had some experience of creating short programs using floor robots and predicting the outcome of a simple program. This unit progresses learners' knowledge and understanding of algorithms and how they are implemented as programs on digital devices. Learners will spend time looking at how the order of commands affects outcomes. Learners will use this knowledge and logical reasoning to trace programs and predict outcomes.

Key vocabulary:
instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition

National Curriculum Objectives:
- Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
- Create and debug simple programs
- Use logical reasoning to predict the behaviour of simple programs

Unit Objectives:
To describe a series of instructions as a sequence.
To explain what happens when we change the order of instructions.
To use logical reasoning to predict the outcome of a program.
To design an algorithm.
To create and debug a program.

Assessment Questions:
What is a sequence on a bee-bot?
What is debugging?
What is an algorithm?

Castle View Primary School Computing Curriculum

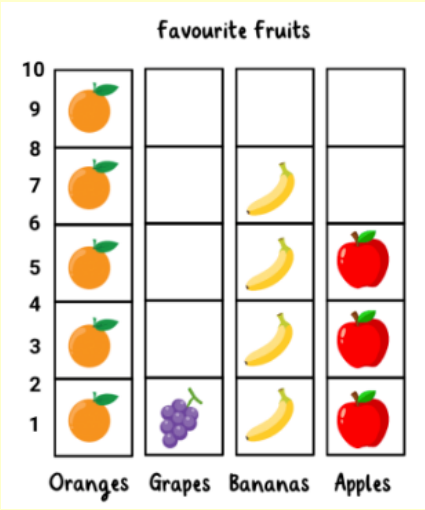
Year 2 – Pictograms

Prior learning:
This unit progresses students' knowledge and understanding of grouping data. It builds on the Year 1 Data and Information unit where learners labelled objects and grouped them based on different properties. In Year 3 learners develop their understanding of attributes (properties) using branching databases to structure data according to different object attributes.

Key vocabulary:
more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing

National Curriculum Objectives:
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Unit Objectives:
To recognise that we can count and compare objects using tally charts
To recognise that objects can be represented as pictures
To create a pictogram
To select objects by attribute and make comparisons.
To recognise that people can be described by attributes.
To explain that we can present information using a computer.



Assessment Questions:
How can objects be represented as pictures?
What attributes can people have that could be used in pictograms?
What is a diagram?
What is a tally chart?

Castle View Primary School Computing Curriculum

Year 2 – Making Music

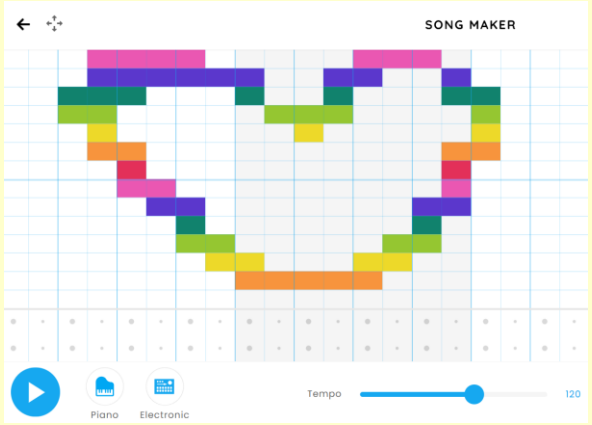
Prior learning:
Learners should have experience of making choices on a tablet/computer, and they should be able to navigate within an application. Learners should also have some experience of patterns.
This unit progresses students' knowledge through listening to music and considering how music can affect how we think and feel. Learners will then purposefully create rhythm patterns and music.

Key vocabulary:
music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit.

National Curriculum Objectives:
- Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

***Unit Objectives*:**
To say how music can make us feel.
To identify that there are patterns in music.
To experiment with sound using a computer.
To use a computer to create a musical pattern.
To create music for purpose.
To review and refine our computer work.

Assessment Questions:
Why is it good to make music on a computer?
How can we edit our work?
How can music make us feel?
What can a musical pattern look like?



Castle View Primary School Computing Curriculum

Year 2 – Programming Quizzes

Prior learning:
This unit progresses learners' knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.

Key vocabulary:
sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code.

National Curriculum Objectives and *Unit Objectives*:
- Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
- Create and debug simple programs
- Use logical reasoning to predict the behaviour of simple programs
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Use logical reasoning to predict the behaviour of simple programs

***Unit Objectives*:**
To explain that a sequence of commands has a start.
To explain that a sequence of commands has an outcome.
To create a program using a given design.
To change a given design.
To create a program using my own design.
To decide how my project can be improved.

Assessment Questions:
What is an algorithm?
What happens when you run a program?
What will a series of commands always have?
What skill would you use if your sequence did not work?

Castle View Primary School Computing Curriculum

Year 3 – Connecting Computers

Prior learning:
This unit progresses learners' knowledge and understanding of technology by focusing on digital and non-digital devices, from the following units; Technology around me Year 1 and IT around us Year 2, and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks.

Key vocabulary:
digital device, input, process, output, program,
digital, non-digital, connection, network, switch,
server, wireless access point, cables, sockets

National Curriculum Objectives:
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web; 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
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

***Unit Objectives*:**
To explain how digital devices function.
To identify input and output devices.
To recognise how digital devices can change the way we work.
To explain how a computer network can be used to share information.
To explore how digital devices can be connected.
To recognise the physical components of a network.

Assessment Questions:
What makes up a network?
How is information shared on a network?
How have computers changed the way we work?
How can digital devices be connected?

Castle View Primary School Computing Curriculum

Year 3 – Stop-Frame Animation

Prior learning:
This unit progresses learner's knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations. It builds on learners previous understanding of images from the Digital Photography Year 2 unit. Following this unit, learners will further develop their video editing skills in Year 5.

Key vocabulary:
animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition.

National Curriculum Objectives:
- 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
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

***Unit Objectives*:**
To explain that animation is a sequence of drawings or photographs.
To relate animated movement with a sequence of images.
To plan an animation.
To identify the need to work consistently and carefully.
To review and improve an animation.
To evaluate the impact of adding other media to an animation.

Assessment Questions:
What is animation?
What is animation used for?
How do you create animation?
What is media?
How can adding other media help to improve an animation?

Castle View Primary School Computing Curriculum

Year 3 – Sequencing Sounds

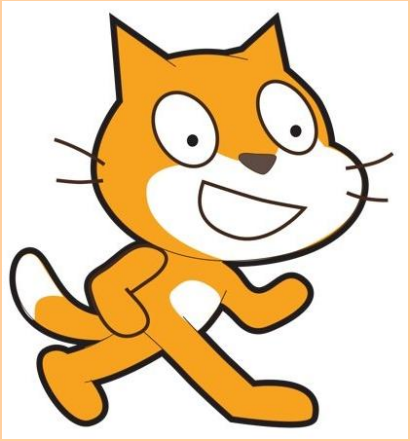
Prior learning:
This unit knows that learners will have some prior experience of programming; via the KS1 NCCE units. They will have experienced programming via floor robots; Moving A Robot Year 1 and Robot algorithms Year 2, alongside the use of ScratchJr through Programming animations Year 1 and Programming quizzes Year 2. ScratchJr uses a similar programming environment to Scratch, which is highlighted in lesson 1 of this unit.

National Curriculum Objectives:
- 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
- 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.

Unit Objectives:
To identify that commands have an outcome.
To explain a program has a start.
To recognise that a sequence of commands can have an order.
To change the appearance of a project.
To create a project from a task description.

Key vocabulary:
Scratch, programming, blocks, commands, code,
sprite, costume, stage, backdrop, motion, turn, point
in direction, go to, glide, sequence, event, task, design, run the code, order,
note, chord, algorithm, bug,
debug, code.

Assessment Questions:
What do commands always have?
Is it important to have an order to commands? Why?
How can you change the appearance of a project?



Castle View Primary School Computing Curriculum

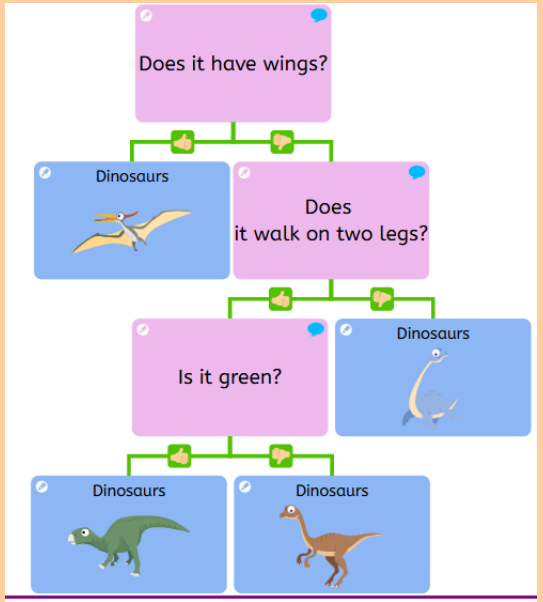
Year 3 – Branching Databases

Prior learning:
This unit progresses learners' knowledge and understanding of the categories of data handling, with a particular focus on implementation. It builds on their knowledge of data and information from Key Stage 1; Grouping data in Year 1 and Pictograms in Year 2. They will continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information.

Key vocabulary:
attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.

National Curriculum Objectives:
- 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
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Unit Objectives:
To create questions with yes/no answers.
To identify the attributes needed to collect data about an object.
To create a branching database.
To explain why it is helpful for a database to be well structured.
To plan the structure of a branching database.
To independently create an identification tool.



Assessment Questions:
What is a branching database?
Why are branches databases useful?
Why is it helpful for a database to be well-structured?
What is an identification tool?

Castle View Primary School Computing Curriculum

Year 3 – Desktop Publishing

Prior learning:
This unit progresses learners' knowledge and understanding of using digital devices to combine text and images building on work from the following units; Digital Writing Year 1, Digital painting Year 1, and Digital Photography Year 2.

Key vocabulary:
text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits.

National Curriculum Objectives:
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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.

Unit Objectives:
To recognise how text and images convey information.
To recognise that text and layout can be edited.
To choose appropriate page settings.
To add content to a desktop publishing publication.
To consider how different layouts can suit different purposes.
To consider the benefits of desktop publishing.

Assessment Questions:
How does text and images convey information?
How can text and layout be changed?
What page settings can be chosen?
What can be added to a publication?
What are the benefits of using desktop publishing?

Castle View Primary School Computing Curriculum

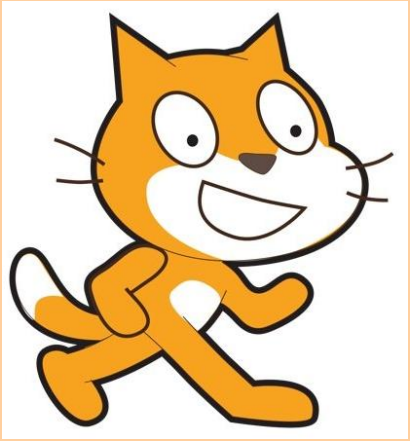
Year 3 – Events and Actions in Programs

Prior learning:
Learners will have some prior experience of programming; via the KS1 NCCE units. They will have experienced programming via floor robots; Moving A Robot Year 1 and Robot algorithms Year 2, alongside the use of ScratchJr through Programming animations Year 1 and Programming quizzes Year 2. The Year 3 Programming A unit introduces the Scratch programming environment and the concept of sequences.

Key vocabulary:
motion, event, sprite, algorithm, logic, move, resize, extension block, pen
up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.

National Curriculum Objectives:
- 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
- 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.

Unit Objectives:
To explain how a sprite moves in an existing project.
To create a program to move a sprite in four directions.
To adapt a program to a new content.
To develop my program by adding features.
To identify and fix bugs in a program.
To design and create a maze-based challenge.



Assessment Questions:
How can sprites move?
What can the pen setting do in Scratch?
How can you test if your system works?

Castle View Primary School Computing Curriculum

Year 4 – The Internet

Prior learning:
This unit progresses students' knowledge and understanding of networks from that developed in the Year 3 Connecting Computers unit. In Year 5, they will continue to develop their knowledge and understanding of computing systems and understand how search engines work via the internet and the world wide web.

National Curriculum Objectives:
- Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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
- Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

***Unit Objectives*:**
To describe how networks physically connect to other networks.
To recognise how networked devices make up the internet.
To outline how websites can be shared via the World Wide Web.
To describe how content can be added and accessed on the World Wide Web.
Evaluate the consequences of unreliable content.

Key vocabulary:
internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts

Assessment Questions:
How do networks physically connect to other networks?
How do devices make up the internet?
How can websites be shared?
What are the problems with unreliable content?

Castle View Primary School Computing Curriculum

Year 4 – Audio Production

Prior learning:
This unit progresses students' knowledge and understanding of creating media, by focusing on the recording and editing of sound to produce a podcast. Following this unit, learners will explore combining audio with video in the 'Video editing' unit in Year 5.

Key vocabulary:
audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback.

National Curriculum Objectives:
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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
- Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

***Unit Objectives*:**
To identify sounds that can be recorded.
To explain that audio recordings can be edited.
To recognise the different parts of creating a podcast project.
To apply audio editing skills independently.
To combine audio to enhance my podcast project.
To evaluate the effective use of audio.

Assessment Questions:
What sounds can be recorded?
How can audio be edited?
What are the different parts of creating a podcast?

Castle View Primary School Computing Curriculum

Year 4 – Repetition in Shapes

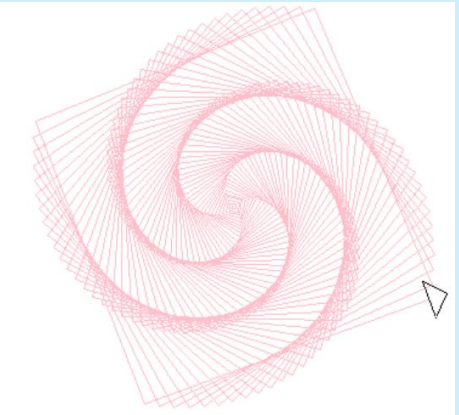
Prior learning:
This unit progresses students' knowledge and understanding of programming. Within the Year 3 units, Programming A- Sequencing Sounds and Programming B- Events and Actions in programs, learners will have an awareness of the sequence of commands in a program. This unit progresses on to using count-controlled loops in those sequences. Pupils will create algorithms and then implement those algorithms as code.

Key vocabulary:
Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.

National Curriculum Objectives:
- 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
- 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

Unit Objectives:
To identify that accuracy in programming is important.
To create a program in a text-based language.
To explain what 'repeat' means.
To modify a count-controlled loop to produce a given outcome.
To decompose a task into small steps.
To create a program that uses count-controlled loops to produce a given outcome.

Assessment Questions:
What does 'repeat' mean in coding?
What does procedure mean?
What does the turtle do?
What is a loop?



Castle View Primary School Computing Curriculum

Year 4 – Data Logging

Prior learning:
This unit progresses learners' knowledge and understanding of data and how it can be collected over time to answer questions. Specifically, it builds on the concept of answering questions with data which is first introduced in the KS1 data and information units. The unit also introduces the idea of automatic data collection. Learners are also introduced to data in tables and graphs, knowledge they will build on in the Year 5 unit (flat file databases) and the Year 6 unit (spreadsheets).

Key vocabulary:
data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion.

National Curriculum Objectives:
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- 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

Unit Objectives:
To explain that data gathered over time can be used to answer questions.
To use a digital device to collect data automatically.
To explain that a data logger collects 'data points' from sensors over time.
To recognise how a computer can help us analyse data.
To identify the data needed to answer questions.
To use data from sensors to answer questions.

Assessment Questions:
What is a data logger?
What can a data logger be used for?
What does it mean to export?
What does it mean to import?

Castle View Primary School Computing Curriculum

Year 4 – Photo Editing

Prior learning:
This unit progresses students' knowledge and understanding of digital photography and using digital devices to create media. Learners will have had some exposure to images and their manipulation through the Teach Computing Digital Photography- Year 2 unit. Following this unit, learners will further develop their image editing skills in Year 5 – Vector drawing.

Key vocabulary:
image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.

National Curriculum Objectives:
- 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
- Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Unit Objectives:
To explain that the composition of digital images can be changed.
To explain that colours can be changed in digital images.
To explain how cloning can be used in photo editing.
To explain that images can be combined.
To combine images for a purpose.
To evaluate how changes can improve an image.

Assessment Questions:
How can cloning be used in photo editing?
How can digital images be changed?
How can colour be changed in digital images?

Castle View Primary School Computing Curriculum

Year 4 – Repetition in Games

Prior learning:
This unit assumes that learners will have some prior experience of programming. The KS1 NCCE units cover floor robots and ScratchJr, and Scratch, and the skill of sequence, is introduced in the Year 3 programming units: Sequencing Sounds and Events and actions in programs. However, experience of other languages or environments may also be useful.

Key vocabulary:
Scratch, programming, sprite, blocks, code, loop,
repeat, value, infinite loop,
count-controlled loop, costume, repetition, forever,
animate, event block, duplicate, modify, design,
algorithm, debug, refine, evaluate.

National Curriculum Objectives:
- 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
- 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

Unit Objectives:
To develop the use of count-controlled loops in a different programming environment.
To explain that in programming there are infinite loops and count-controlled loops.
To develop a design that includes two or more loops which run at the same time.
To modify an infinite loop in a given program.
To design a project that includes repetition.
To create a project that includes repetition.

Assessment Questions:
How can count-controlled loops be used?
What is the difference between infinite loops and count-controlled loops?
What does duplicate mean?

Castle View Primary School Computing Curriculum

Year 5 – Systems and Searching

Prior learning:
This unit progresses learners' knowledge and understanding of computing systems.
This unit progresses students' knowledge and understanding of the internet from that developed in the Year 4 The Internet unit In Year 6, they will continue to develop their knowledge and understanding of the internet, looking at how data is transferred and how the internet facilitates communication and collaboration online.

Key vocabulary:
system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking.

National Curriculum Objectives:
- Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration

***Unit Objectives*:**
To explain that computers can be connected together to form a system.
To recognise the role of computer systems in our lives.
To identify how to use a search engine.
To describe how search engines select results.
To explain how search results are ranked.
To recognise why the order of results is important, and to whom.

Assessment Questions:
What is a search engine?
How are results ranked?
Why is it important to know how results are ranked?

Castle View Primary School Computing Curriculum

Year 5 – Video Production

Prior learning:
This unit progresses learners' knowledge and understanding of creating media by guiding them systematically through the process involved in creating a video. The unit builds on the Year 4 Photo editing unit where composition is introduced and the Year 3 unit 'Stop-frame animation' where learners explored some of the features of video production. By the end of this unit, learners will have developed the skills required to plan, record, edit, and share a video.

National Curriculum Objectives:
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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
- Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

***Unit Objectives*:**
To explain what makes a video effective.
To use a digital device to record video.
To capture video using a range of techniques.
To create a storyboard.
To identify that video can be improved through reshooting and editing.
To consider the impact of the choices made when making and sharing videos.

Key vocabulary:
video, audio, camera, talking
head, panning, close up, video camera, microphone,
lens, mid-range, long shot,
moving subject, side by side,
angle (high, low, normal), static, zoom, pan, tilt,
storyboard, filming, review,
import, split, trim, clip, edit,
reshoot, delete, reorder, export, evaluate, share.

Assessment Questions:
What makes a video effective?
How can videos be improved?
What can happen when videos are shared?

Castle View Primary School Computing Curriculum

Year 5 – Selection in Physical Computing

Prior learning:
This unit assumes that learners will have prior experience of programming using a block-based language (e.g. Scratch) and understand the concepts of sequence and repetition. The National Centre for Computing Education Key Stage 1 units focus on floor robots and ScratchJr, however, experience of other languages or environments may also be useful.

Key vocabulary:
microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer

National Curriculum Objectives:
- 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
- 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

***Unit Objectives*:**
To control a simple circuit connected to a computer.
To write a program that includes count-controlled loops.
To explain that a loop can stop when a condition is met.
To explain that a loop can be used to repeatedly check whether a condition has been met.
To design a project that includes selection.
To create a program that controls a physical computing project.

Assessment Questions:
When can a loop stop?
What is a Crumble controller?
What is an input?
What is an output?

Castle View Primary School Computing Curriculum

Year 5 – Flat-File Databases

Prior learning:
This unit progresses learners' knowledge and understanding of why and how information might be stored in a database and looks at how tools within a database can help us to answer questions about our data. It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems. Finally, the learners create a presentation showing understanding and application of all the tools used within the unit.

Key vocabulary:
database, data, information,
record, field, sort, order,
group, search, value, criteria,
graph, chart, axis, compare,
filter, presentation.

National Curriculum Objectives:
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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

***Unit Objectives*:**
To use a form to record information.
To compare paper and computer-based databases.
To outline how you can answer questions by grouping and then sorting data.
To explain that tools can be used to select specific data.
To explain that computer programs can be used to compare data visually.
To use a real-world database to answer questions.

Assessment Questions:
What is the difference between a paper database and a computer-based database?
How can tools be used to select specific data?
How can computer programs be used to compare data?

Castle View Primary School Computing Curriculum

Year 5 – Introduction to Vector Drawing

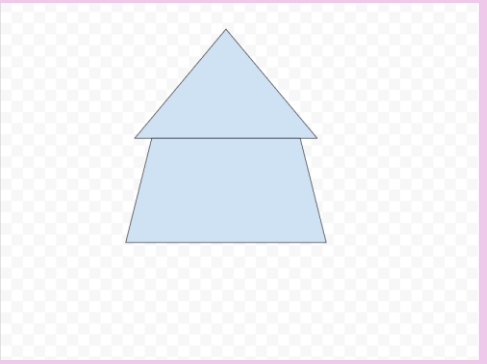
Prior learning:
This unit progresses learners' knowledge and understanding of digital painting and has some links to the Year 3 'Creating media – Desktop publishing' unit, in which learners used digital images. In this Year 5 unit, learners create images that could be used in desktop publishing documents.

Key vocabulary:
vector, drawing tools, object,
toolbar, vector drawing, move, resize, colour, rotate,
duplicate/copy, zoom, select, align, modify, layers,
order, copy, paste, group, ungroup, reuse, reflection

National Curriculum Objectives:
- 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

***Unit Objectives*:**
To identify that drawing tools can be used to produce different outcomes.
To create a vector drawing by combining shapes.
To use tools to achieve a desired effect.
To recognise that vector drawings consist of layers.
To group objects to make them easier to work with.
To apply knowledge of vector drawings.

Assessment Questions:
What is a vector drawing?
How can they be used?
How are layers used in vector drawings?
How does grouping objects help?



Castle View Primary School Computing Curriculum

Year 5 – Selection in Quizzes

Prior learning:
This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of 'sequence' (Year 3 units: Sequencing Sounds and Events and actions in programs) and 'repetition' (Year 4 units: Repetition in shapes and Repetition in games), and have some experience of using 'selection'. Ideally, learners will have completed 'Programming A – Selection in physical computing' before undertaking this unit, as this will provide them with the required knowledge of 'selection'.

Key vocabulary:
Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator

National Curriculum Objectives:
- 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
- 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

***Unit Objectives*:**
To explain how selection is used in computer programs.
To relate that a conditional statement connects a condition to an outcome.
To explain how selection directs the flow of a program.
To design a program that uses selection.
To create a program that uses selection.
To evaluate my program.

Assessment Questions:
How is selection used in computer programs?
How does selection direct the flow of a program?
What is an algorithm and give examples of how they are used?

Castle View Primary School Computing Curriculum

Year 6 – Communication and Collaboration

Prior learning:
This unit progresses students' knowledge and understanding of computer systems and networks developed in the Year 5 Systems and Searching unit, looking at how data is transferred and how the internet facilitates communication and collaboration online.

National Curriculum Objectives:
- Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, 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
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

***Unit Objectives*:**
To explain the importance of internet addresses.
To recognise how data is transferred across the internet.
To explain how sharing information online can help people work together.
To evaluate different ways of working together online.
To recognise how we communicate using technology.
To evaluate different methods of online communication.

Key vocabulary:
communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, oneway, two-way, one-to-one, one-to-many.

Assessment Questions:
What is the importance of internet addresses?
How is data transferred across the internet?
How can sharing information online help people work together?
How do we communicate using technology?

Castle View Primary School Computing Curriculum

Year 6 – Web Page Creation

Prior learning:
This unit progresses students' knowledge and understanding from a variety of lessons from the Teach Computing, across different strands: digital writing, digital painting, desktop publishing, photo editing, and vector drawing.

Key vocabulary:
website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed.

National Curriculum Objectives:
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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.
- Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour.

***Unit Objectives*:**
To review an existing website and consider its structure.
To plan the features of a web page.
To consider the ownership and use of images (copyright).
To recognise the need to preview pages.
To outline the need for a navigation path.
To recognise the implications of linking to content owned by other people.

Assessment Questions:
What makes a good website?
What is copyright?
What is a navigation path?
Why do creators need to preview pages?

Castle View Primary School Computing Curriculum

Year 6 – Variables in Games

Prior learning:
This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of 'sequence' (Year 3 units: Sequencing Sounds and Events and actions in programs), 'repetition' (Year 4 units: Repetition in shapes and Repetition in games), and 'selection' (Year 5 units: Selection in Physical Computing and Selection in quizzes). The constructs covered in the previous year groups will include at least one unit that develops the concept through the use of Scratch.

Key vocabulary:
variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare

National Curriculum Objectives:
- 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
- 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

***Unit Objectives*:**
To define a 'variable' as something that is changeable.
To explain why a variable is used in a program.
To choose how to improve a game by using variables.
To design a project that builds on a given example.
To use my design to create a project.
To evaluate my project.

Assessment Questions:
What is a variable?
Why are variables used in programs?
What is debugging and why is it so important?

Castle View Primary School Computing Curriculum

Year 6 – Introduction to Spreadsheets

Prior learning:
This unit progresses students' knowledge and understanding of data and teaches them how to organise and modify data within spreadsheets. Specifically, learners will have experienced data in tables and charts in the Y4 Data Logging unit and Y5 Branching Database unit.

National Curriculum Objectives:
- 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.

Unit Objectives:
To create data set in a spreadsheet.
To build a data set in a spreadsheet.
To explain that formulas can be used to produce calculated data.
To apply formulas to data.
To create a spreadsheet to plan an event.
To choose suitable ways to present data.

Key vocabulary:
data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools.

Assessment Questions:
What is a spreadsheet?
What is a formula?
What can formulas be used for?
What is a cell in a spreadsheet?

Castle View Primary School Computing Curriculum

Year 6 – 3D Modelling

Prior learning:
This unit progresses students' knowledge and understanding of creating 3D graphics using a computer. Prior to undertaking this unit, learners should have worked with 2D graphics applications.

National Curriculum Objectives:
- 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
- Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

***Unit Objectives*:**
To recognise that you can work in three dimensions on a computer.
To identify that digital 3D objects can be modified.
To recognise that objects can be combined in a 3D model.
To create a 3D model for a given purpose.
To plan my own 3D model.
To create my own digital 3D model.

Key vocabulary:
TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify.

Assessment Questions:
What is CAD?
What can CAD be used for?
What does it mean to modify a design?

Castle View Primary School Computing Curriculum

Year 6 – Sensing

Prior learning:
This unit builds on the fact that pupils are already confident in their understanding of sequence, repetition and selection independently within programming.

Key vocabulary:
Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug.

National Curriculum Objectives:
- 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
- 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

***Unit Objectives*:**
To create a program to run on a controllable device.
To explain that selection can control the flow of a program.
To update a variable with a user input.
To use a conditional statement to compare a variable to a value.
To design a project that uses inputs and outputs on a controllable device.
To develop a program to use inputs and outputs on a controllable device.

Assessment Questions:
What does selection do?
What is a USB?
What is a Micro:bit?