

Computing in Year 6

Topics: Communication & Collaboration, Webpage Creation, Variables in Games, Introduction to Spreadsheets, 3D Modelling, Sensing Movement

Communication & Collaboration

National Curriculum Statements:

- 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

Knowledge:

- Explain the importance of internet addresses and recognise how data is transferred across the internet.
- Recognise how sharing information online can help people to work together and use this to evaluate different ways of working together online.
- Know how we communicate using technology and evaluate different methods of online communication.

Implementing Skills:

- Explore what is necessary for effective communication and importance of agreed protocols. Learn to use a Domain Name Server (DNS) to translate
- Complete an activity based on transferring an image across the internet
- Complete a collaborative online project using slides that include text and images.
- Use Scratch programming tool to reuse and modify someone else's work.
- Explore different methods of communication and evaluate which methods of communication suit particular purposes.
- Explore issues around privacy, information security, and how to report concerns about inappropriate content online.

Assessment:

- Can they explain the importance of internet addresses and recognise how data is transferred across the internet?
- Can they explain how sharing information online can help people work together and evaluate different ways of working together online?
- Can they recognise how we communicate using technology and evaluate different methods of online communication?

Webpage Creation

National Curriculum Statements:

- 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 and unacceptable behaviour, identify a range of ways to report concerns about content and contact

Knowledge:

- Know the different types of media and layouts used on websites.
- Understand the terms 'fair use' and 'copyright'
- Recognise the need for a navigation pathway.
- Recognise the implications of linking to content owned by other people.

Implementing Skills:

- Explore and review existing websites and evaluate their content.
- Plan and create their own website in Google Sites creating their own home page.
- Create multiple web pages and use hyperlinks to link them together.
- Evaluate the user experience when using their website.

Assessment:

- Can they review an existing website & consider its structure?
- Can they plan the features of a web page and recognise the need to preview pages?
- Can they outline the need for a navigation pathway and recognise the implications of linking to content owned by other people?

Variables in Games**National Curriculum Statements:**

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

Knowledge:

- Define a 'variable' as something that is changeable.
- Explain why a variable is used in a program and improve a game by using variables.
- Know what skills are needed to be a 'games designer'.

Implementing Skills:

- Explore examples of real-world variables before exploring them in a Scratch project. Then design and make their own projects that includes variables.
- Complete an unplugged task that demonstrates the process of changing variables. Then explore why it is important to name variables and apply their learning in a Scratch project in which they make, name and update variables.
- Apply the concept of variables to enhance an existing game in Scratch. Also experiment with different values in variables.
- Become a games designer creating artwork and planning algorithms, designing sprites and backgrounds for a project.
- Evaluate their game, consider how it could be improved and make small changes to achieve this.

Assessment:

- Can they define a variable as something that is changeable and explain why a variable is used in a program?
- Can they choose how to improve a game by using variables?
- Can they design a project that builds on a given example and use design to create a project and evaluate their project?

Introduction to Spreadsheets**National Curriculum Statements:**

- 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

Knowledge:

- Know how to create a data set in a spreadsheet.
- Understand the structure of a spreadsheet.
- Explain that formulas can be used to produce calculated data and use this to apply formulas to data.
- Understand how to use a spreadsheet to plan an event.

Implementing Skills:

- Collect and organise data in a format of their choice then explore how data can be structured in a table.
- Develop an understanding of the structure of a spreadsheet, format data in different ways then apply formats in their own spreadsheet.
- Create formulas to use in a spreadsheet using cell references and identify that changing inputs will change the output of a calculation.
- Calculate data using operations of multiplication, subtraction, addition and division. Use these operations to create a formula in a spreadsheet.
- Plan and calculate the cost of an event using a spreadsheet by using a predefined list to choose what they would like to include and use a spreadsheet to answer questions.
- Choose suitable ways to present data e.g. table or chart and identify when to use each one.

Assessment:

- Can they create and build a data set in a spreadsheet?
- Explain that formulas can be used to produce calculated data and apply formulas to data?
- Create a spreadsheet to plan an event and choose suitable ways to present data?

3D Modelling

National Curriculum Statements:

- 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

Knowledge:

- Recognise how you can work in three dimensions on a computer.
- Know how to modify 3D digital objects.
- Recognise that objects can be combined in a 3D model.
- Know how to create a 3D model for a given purpose.

Implementing Skills:

- Explore the concept of 3D modelling by creating a range of 3D shapes that they select and move. Examine shapes from a variety of views.
- Manipulate 3D objects digitally: resize objects in one, two and three dimensions. Combine 2 3D objects to make a new shape and recolour.
- Manipulate 3D objects digitally by rotating, duplicating then grouping and ungrouping to manipulate many objects at once.
- Create their own 3D name badge.
- Explore how architects use 3D design to visualise and plan buildings and then plan their own 3D building.
- Create a 3D model based on their design.

Assessment:

- Can they recognise that you can work in 3 dimensions on a computer and identify that digital 3D objects can be modified?
- Can they recognise that objects can be combined in a 3D model and create a 3D model for a given purpose?
- Can they plan a 3D model and create own digital 3D model?

Sensing Movement

National Curriculum Statements:

- 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 connect 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

Knowledge:

- Use knowledge of programming to create a program to run on a controllable device.
- Explain that a selection can control the flow of a program.
- Know how to update a variable with a user input and how to use a conditional statement to compare a variable to a value.
- Know how to use inputs and outputs on a controllable device and use this to develop a program.

Implementing Skills:

- Explore micro:bit as an input, process, output device that can be programmed then create their own programs.
- Relate if, then, else statements to real-world situations before creating programs in MakeCode. Apply knowledge of if, then, else statements to create a program that features selection influenced by a random number to create a micro:bit fortune teller project.
- Update their program to update the variable by moving their micro:bit using the accelerometer to sense motion.
- Modify a program to enable the micro:bit to be used as a navigational device e.g. basic compass.
- Design and develop a program to use inputs and outputs on a controllable device.

Assessment:

- Can they create a program to run on a controllable device and explain that selection can control the flow of a program?
- Can they update a variable with a user input and use a conditional statement to compare a variable value?
- Can they design & develop a project that uses inputs & outputs on a controllable device?