

Key Stage 2 Curriculum Overview –  
Computing

**Curriculum Intent**

To ‘Live Life in All Its Fullness’ in the world that Holywell students will encounter as adults will require the embracing of technology as a discerning, responsible and competent Digital Citizen. In this light, our Computing Curriculum is designed to empower students with the foundational knowledge, skills, and understanding necessary to thrive in a rapidly evolving digital world. Our curriculum aims to inspire a passion for technology and problem-solving, equipping students with the confidence and competence to navigate, create, and innovate in the digital landscape. By fostering a deep understanding of computing principles, we strive to develop critical thinkers who are not only adept at using technology but also capable of understanding and shaping its future.

Through a blend of theory, practical application, and project-based learning, the KS2 Computing Curriculum seeks to nurture well-rounded individuals who are not only proficient in technology but also capable of using it to enhance their lives and the lives of others. We are dedicated to creating an inclusive and supportive environment that encourages every student to explore, discover, and thrive.

Term	Year 5	Year 6
<b>Autumn term 1</b>	<p><b>Title of unit:</b> Strategic Searching Online  <b>Main focus:</b> An introduction to using search engines and online searching.</p> <p><b>By the end of the unit, students will have learned to:</b>                      Use technology purposefully to retrieve digital content (using search engines)                      Appreciate how results are selected and ranked                      Be discerning in evaluating digital content.                      Understand computer systems in terms of information flow</p> <p><b>By the end of the unit students will be able to:</b>                      Search for information using appropriate search engines.                      Refine their searches using appropriate keywords.                      With support, students can begin to use strategies to check the reliability of information on web pages.                      With support, students can begin to explain how search engines work using some key vocabulary.                      Talk about the way search results are selected and ranked.                      Explain what search engine optimisation (SEO) is.</p>	<p><b>Title of unit:</b> Programming – Variables in Games  <b>Main focus:</b> To develop programming skills and adding in knowledge about using variables in a games setting</p> <p><b>By the end of the unit, students will have learned to:</b>                      Use sequence, selection, and repetition in programs                      Work with variables and various forms of input and output</p> <p><b>By the end of the unit students will be able:</b>                      To explore the concept of variables in programming through games in Scratch.                      To define variables and relate them to real-world examples of values that can be set and changed.                      To use variables to create a simulation of a scoreboard.                      To use the Use-Modify-Create model                      To experiment with variables in an existing project, then modify them, before they create their own project.                      To explore game design.                      To apply their knowledge of variables and design to improve their games in Scratch.</p>

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Evidence of learning	Summative assessment: The main task in Lesson 6 will allow students to demonstrate their Search Engine knowledge. By the end of this unit of work, students should have learned the component knowledge above. The unit is designed to enable students to access Year 5 Digital Literacy descriptors about understanding the opportunities computer networks offer for communication and to apply their IT knowledge to collect data.	Summative assessment: Use of variables in games Scratch game – peer assessed <b>This unit assumes that learners have some prior experience of programming. Specifically, with the programming constructs of sequence, repetition, and selection. These constructs are covered in the Year 5 programming unit.</b>
Links to prior learning	N/A	In Year 5 students did a programming unit using FLOWOL – this is another visual-based programming environment; students will develop their sequencing skills
Links to future learning	Ideas learnt in this unit will be further developed in year 7 - Using Computers Safely, Effectively and Responsibly	There is a future Scratch unit later in Year 6 and another in Year 7
Careers links	Website designer Researcher Content Manager SEO expert	Computer games programming and design
Protected characteristics	Bias when searching and using technology safely, respectfully and responsibly Identifying ways to report concerns about content	N/A
<b>Autumn term 2</b>	<p><b>Title of unit</b> Introduction to Programming (Flowol) <b>Main focus:</b> An introduction to programming</p> <p><b>By the end of the unit, students will have learned to:</b> Write programs that accomplish specific goals using sequences Control and simulate physical systems (using the FLOWOL program)</p> <p><b>By the end of the unit students will be able:</b> To define and understand what an algorithm is To know, understand and define 'input', 'output' and other operating processes To understand, use and create visual programs using FLOWOL (inc. knowledge of the flowchart symbols, organisation protocols and commands; To follow written instructions to draw a simple flowchart. To Insert symbols into a flowchart. To Add inputs into a flowchart. To identify conventional symbols,</p>	<p><b>Title of unit</b> Introduction to Spreadsheets <b>Main focus:</b> To learn how spreadsheets can be used to organise and present data.</p> <p><b>By the end of the unit, students will have learned to:</b> Combine a variety of software to accomplish given goals Analyse data Evaluate data</p> <p><b>By the end of the unit students will be able:</b> To know how to create data sets by organising data into columns and rows. To recognise cells can be linked To recognise that a cell's value automatically updates when the value in a linked cell is changed. To format data to support calculations. To explain that formulas can be used to produce calculated data To apply formulae to multiple cells. To create charts from data and evaluate results.</p>

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	To understand the difference between, and appropriately uses if and if, then and else statements (Extended learning: Can use a variable and relational operators within a loop to govern termination).	
Evidence of learning	Summative assessment: Written assessment + Flowol program for zebra crossing.	Formative assessment opportunities are provided in each lesson: peer assessment of spreadsheets. Summative assessment: Online test and spreadsheet for created event.
Links to prior learning	No known prior knowledge	No known prior knowledge (spreadsheets not part of Year 5 content)
Links to future learning	Further programming through the use of the Crumble programming environment later in Year 5 ... and Scratch in Year 6.	Year 8 Spreadsheet modelling
How we track your progress	This unit is designed as an introduction to the software and the concepts of flowchart programming.	This unit is designed to introduce spreadsheets in line with the KS2 competency descriptors.
Careers links	Computer games programming and design	Various research, admin and finance roles.
<b>Spring term 1</b>	<p><b>Title of unit</b> Audio Production</p> <p><b>Main focus:</b> To understand how audio is recorded and manipulated on a computer and to use this knowledge to produce a digital artefact in the form of a podcast.</p> <p><b>By the end of the unit, students will have learned to:</b> Combine multiple applications to achieve challenging goals (NB. This needs to involve selecting, using and combining multiple applications) Revise digital artefacts for a given audience Meet the needs of known users</p> <p><b>By the end of the unit students will be able:</b> To identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally To understand copyright implications of duplicating the work of others To become familiar with audio editing software (Audacity) To produce a podcast – this will involve editing work, adding multiple tracks, and opening and saving the audio files</p>	<p><b>Title of unit</b> Ozaria</p> <p><b>Main focus:</b> To further develop programming skills and to move students from visual or block-based programming to text-based programming; writing more complex algorithms and the process decomposition</p> <p><b>By the end of the unit, students will have learned to:</b> Design, write and debug programs that accomplish specific goals Solve problems by decomposing them into smaller parts Use sequence, selection, and repetition ('loops' or 'iteration') in programs Work with variables and various forms of input and output Use logical reasoning to explain how some simple algorithms work Use logical reasoning to detect and correct errors in algorithms and programs</p> <p><b>By the end of the unit students will be able:</b> To recall, define and understand what an algorithm is To know, understand and define 'input', 'output', 'sub goals' and other operating processes To understand, use and create text-based programs using OZARIA (inc. knowledge of writing textual instructions, taking care with syntax, debugging, spotting syntax errors) To take a process and 'deconstruct it' into step-by-step instructions To know and understand Integrated Development Environments (IDE) To create syntax</p>

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		<p>To learn how to debug a program (the process of identifying and removing errors from your code so you can meet specified goals)</p> <p>To learn the difference between a logical and a syntax error (ie. sequential and lexical errors)</p> <p>To know, understand and use objects, methods, and arguments (an introduction to object-oriented programming)</p> <p>To learn how to code using loops</p>
Evidence of learning	Students will produce a podcast that will be peer assessed. The unit is designed for students to attain aspects of the KS2 Programme of Study as per the progress descriptors.	<p>Independent Practice Challenge from Lesson 4 (Game simulation and screen grab of coding)</p> <p>Presentation checklist from Lesson 4 (as a PowerPoint summary). The unit is designed to move students from visual or block-based programming to text-based programming</p> <p>The unit allows students to progress from Year 5 to Year 6 descriptors through greater use and understanding of variables and moving from using repetition to using sequence, selection and repetition in programs</p>
Links to prior learning	No knowledge of prior learning	<p>Students will have completed an introduction to programming in Year 5 using Flowol</p> <p>Students have completed a unit of work in English on Instruction-writing (Autumn1b)</p>
Links to future learning	In Year 8 students will encounter a topic on using media to gain support for a cause that will further develop audio production skills.	Year 7 will develop programming further to look at problem-solving using programming
Careers links	Sound engineer Media production Radio researcher	Computer games programming and design
<b>Spring term 2</b>	<p><b>Title of unit</b> Programming A – Selection in physical computing</p> <p><b>Main focus:</b> To explore concepts of program flow using branching and iteration.</p> <p><b>By the end of the unit, students will have learned to:</b></p> <ul style="list-style-type: none"> <li>Design and write programs that accomplish specific goals</li> <li>Debug programs that accomplish specific goals</li> <li>Use repetition in programs</li> <li>Control or simulate physical systems</li> </ul> <p><b>By the end of the unit students will be able:</b></p> <ul style="list-style-type: none"> <li>To relate that a count-controlled loop contains a condition</li> <li>To explain that a condition can only be true or false</li> <li>To use selection to switch the program flow in one of two ways</li> <li>To use a condition in an ‘if...then...’ statement to start an action</li> <li>To explain that selection can be used to branch the flow of a program</li> </ul>	<p><b>Title of unit</b> E – Safety (Scratch Maths – follow on)</p> <p><b>Main focus:</b> To ensure that students know how to use the computers safely, responsibly and effectively.</p> <p><b>By the end of the unit, students will have learned to:</b></p> <ul style="list-style-type: none"> <li>Understand the opportunities computer networks offer for collaboration</li> <li>Be discerning in evaluating digital content</li> <li>Understand a range of ways to use technology safely</li> </ul> <p><b>By the end of the unit students will be able:</b></p> <ul style="list-style-type: none"> <li>To evaluate the use of technology including the email, social networking, online gaming and mobile phones</li> <li>To consider how one may present themselves online</li> <li>To show understanding and explain how to use technology safely, responsibly and respectfully</li> </ul>

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	<p>To explain that a loop can be used to repeatedly check whether a condition has been met</p> <p>To use a condition in an 'if...then...else...' statement to produce given outcomes</p> <p>To compare a count-controlled loop with a condition-controlled loop</p> <p>To explain that a condition-controlled loop will stop when a condition is met</p> <p>To explain that when a condition is met, a loop will complete a cycle before it stops</p> <p>To create a condition-controlled loop</p> <p>To explain the importance of instruction order in 'if...then...else...' statements</p>	<p>To understand what information to share and what to keep private</p> <p>To demonstrate responsible use of technologies and online services</p> <p>To know a range of ways to report concerns</p> <p>To have clear strategies for judging the reliability of online content</p> <p>To recognise the audience when designing and creating digital content, using success criteria to meet purpose and improve content</p>
Evidence of learning	In Lesson 6 students will produce a simulation of a fairground ride. This will be assessed by teacher and/ or peers. Summative test.	A PowerPoint presentation of E-Safety highlighting the potential problems and providing preventions/solutions An annotated word document which shows evidence of 'Website Reliability' knowledge.
Links to prior learning	This unit will build on concepts learned in the Year 5 Flowol module.	Students will have encountered E-safety concept in Year 5.
Links to future learning	The knowledge gained in this unit will feed into programming modules in Years 6, 7 and 8.	In Year 7, students will further their understanding in a unit of work called Using Computers Safely.
How we track your progress	Progress can be assessed against the KS2 progress descriptors.	This unit is designed to meet the KS2 Programme of Study as per the progress descriptors.
Careers links	Software Developer Software Engineer	Researcher Web developer
<b>Summer term 1</b>	<p><b>Title of unit</b> Data &amp; Information – Flat File Databases</p> <p><b>Main focus:</b> To understand how data can be stored, organised and retrieved with the use of a database.</p> <p><b>By the end of the unit, students will have learned to:</b></p> <p>Select a variety of software to accomplish given goals</p> <p>Collect data</p> <p>Present data</p> <p>Analyse information</p> <p><b>By the end of the unit students will be able:</b></p> <p>To explain that a computer program can be used to organise data</p>	<p><b>Title of unit</b> Creating Media – Web Page Creation</p> <p><b>Main focus:</b> To understand how to develop a website for a given purpose.</p> <p><b>By the end of the unit, students will have learned to:</b></p> <p>Understand computer networks including the internet</p> <p>Understand the opportunities computer networks offer for collaboration</p> <p>Combine a variety of software to accomplish given goals</p> <p><b>By the end of the unit students will be able:</b></p> <p>To recognise the relationship between HTML and visual display</p> <p>To recognise that web pages can contain different media types</p> <p>To recognise that web pages are written by people</p>

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	<p>To explain that tools can be used to select data to answer questions</p> <p>To outline how ordering data allows us to answer some questions</p> <p>To outline how operands can be used to filter data</p> <p>To outline how 'AND' and 'OR' can be used to refine data selection</p> <p>To explain that computer programs can be used to compare data visually</p> <p>To explain that we present information to communicate a message</p>	<p>To recognise that a website is a set of hyperlinked web pages</p> <p>To recognise components of a web page layout</p> <p>To consider the ownership and use of images (copyright)</p>
Evidence of learning	In Lesson 6, students will interrogate a real-life database and record and present their findings. Also, there will be a summative test. This unit is designed to develop understanding of how data can be stored and retrieved from real-life systems. It links to progress descriptors related to evaluation and analysis of information.	Summative assessment: Work produced in lessons 2-6 will be assessed against a Rubric. This unit will move learners on from Year 5 website usage to Year 6 development
Links to prior learning	No knowledge of prior learning	This unit is linked to Year 5 learning related to website usage.
Links to future learning	At KS4 students will build on this knowledge when they learn to use SQL to search databases.	In year 8 Web development themes will be further expanded.
Careers links	Database Administrator Software Developer	Web Developer Content Creator Media Manager
<b>Summer term 2</b>	<p><b>Title of unit</b> <u>Vector Drawing</u></p> <p><b>Main focus::</b> Introduction to Vector graphics and how they are used to create complex, scalable drawings.</p> <p><b>By the end of the unit, students will have learned:</b></p> <p>How to use different drawing tools to help them create vector mages</p> <p><b>By the end of the unit students will be able:</b></p> <p>To identify that a vector drawing comprises separate objects</p> <p>To recognise that each object in a drawing is in its own layer</p> <p>To explain how alignment and size guides can help create a more consistent drawing</p> <p>To recognise that objects can be modified in groups</p> <p>To recognise that vector images can be scaled without impact on quality</p>	<p><b>Title of unit</b> <u>Programming B – Sensing Movement</u></p> <p><b>Main focus:</b>To enable students to use variables and the three major programming concepts: sequence, selection and repetition in the Microbit environment.</p> <p><b>By the end of the unit, students will have learned to:</b></p> <p>Design, write and debug programs that accomplish specific goals</p> <p>Solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs</p> <p>Work with variables and various forms of input and output</p> <p><b>By the end of the unit students will be able:</b></p> <p>To define 'variable' as something that is changeable</p> <p>To identify examples of information that is variable, e.g. a football score during a match</p> <p>To explain that a variable can be used in a program, e.g. 'score'</p> <p>To define a program variable as a placeholder in memory for a single value</p> <p>To explain that a variable has a name and a value</p> <p>To recognise that the value of a variable can be used and changed by a program</p>

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		<p>To identify that variables can hold numbers (integers) or letters (strings)</p> <p>To recognise that a variable can be set as a constant (fixed value)</p> <p>To explain that there is only one value for a variable at any one time</p> <p>To explain that if you read a variable, the value remains</p>
Evidence of learning	Formative Assessment: Self marking of drawing using a Rubric. Summative Test. This module is designed as an introduction to Vector graphics. It corresponds to the Year 5 performance descriptors.	Summative Assessment: Programs produced in lessons 5 and 6 can be assessed using a rubric. This unit enables students to move from Year 5 progress descriptors to baseline year 7 descriptors.
Links to prior learning	No knowledge of prior learning	Link to previous programming units: Ozaria, Programming A Variable in Games, Programming A – selection in physical computing and Flowol.
Links to future learning	The knowledge gained here will link directly to a Year 8 module on Vector Graphics.	This unit will provide a foundation for all subsequent programming modules at KS3 and KS4.
Careers links	Graphic Designer Illustrator	Software Developer Software Engineer
<p><b>Reading in the curriculum (Literacy &amp; Vocabulary)</b></p> <p>New vocabulary is introduced to students through key terms in each lesson. Throughout the curriculum we use a range of different reading resources to add depth and knowledge to students understand.</p>		
<p><b>Safeguarding including safety in the curriculum</b></p> <p>Every year group has an e-safety unit each year to explicitly explore safety and safeguarding in relation to computing/technology</p>		
<p><b>Values across the curriculum</b></p> <p>Our curriculum supports the understanding of the school's core values throughout all of our units of work.</p>		
<p><b>Spirituality in the curriculum</b></p> <p>Our curriculum supports the spiritual development of students by creating an environment of curiosity, exploring interconnectedness, and fostering open-mindedness. By developing these key attributes, we hope to develop a sense of connection to something bigger than ourselves, to help students 'Live life in all its fulness', living our values; being the best we can be, in community.</p>		
<p><b>How we track your progress</b></p> <p>Linking to the progress descriptors all students' progress is tracked through the work they produce and contribute to in class, homework, end of unit assessments and in class assessments/quizzes.</p>		
<p><b>Parents/Carers can support their child by:</b></p> <p>These are the programs we use in school for coding: Ozaria, Scratch, Flowol, Microbits. Scratch and Ozaria are available to download free.</p>		