



# COMPUTING DEPARTMENT

## CURRICULUM INFORMATION

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- 2.) Our Key Concepts
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## Our Vision

*In Computing, our aim is to create 21<sup>st</sup> Century digital ready citizens who use sequential thinking and problem solving independently while using a range of hardware and software to create unique and creative pieces of work. It is our aim that children conduct themselves in the digital world as they would conduct themselves in the physical world by understanding their digital footprint and developing a critical eye to emerging technologies.*

emerging technologies:

their digital footprint and developing a critical eye to

conduct themselves in the physical world by understanding

# Our Core Concepts

Algorithms

Effective use of Tools

Computing Systems

Impact of Technology

Creating Media

Networks

Data and Information

Programming

Design and  
Development

Safety and Security

# Intent

Computing is changing the lives of everyone, especially children and young people. Through the teaching of Computing, we equip children to participate in a rapidly-changing world where work and leisure activities are increasingly transformed by technology. Computing enables rapid access to ideas and experiences from a wide range of communities and cultures. Using Computing tools: pupils can find, explore, analyse, exchange and present information.

We enable them to find, explore, analyse, exchange and present information. We also focus on developing the skills necessary for children to be able to use information in a discriminating and effective way. Increased Computing capability promotes initiative and independent learners. It must be our intent to enable all children in the school to develop the knowledge, skills and understanding that will enable them to function in this digital age. Computing skills are a major factor in enabling children to be confident, creative and independent learners.

It is the aim of Walton Priory Middle School to provide:

- All of our pupils' access to a bespoke curriculum that covers the National Curriculum in greater depth written in collaboration with experts.
- To ensure e-safety and digital citizenship is at the forefront of our teaching to allow pupils to handle challenges that arise from computer use safely.
- To ensure teaching is progressive and taught sequentially with each skill being built on year by year.
- To apply Computing skills in other curriculum areas.
- To offer a broad curriculum with opportunities to develop Computing Capital.
- To develop an awareness of limitations and capabilities of Computing.
- To engage interest in new technologies.
- To ensure Computing is both taught as a discrete subject and as a learning tool in other areas of the curriculum.
- To develop staff knowledge and confidence so they can adapt to the changing field of Computing and ensure all our children receive a Computing education in line with their needs, ability and access.

# Implementation

At Walton Priory Middle School, computing is taught using a module curriculum approach with STEAM project rotations to reinforce and consolidate skills. We have a bespoke Computing curriculum underpinned with planning from the National Centre for Computing Education. This ensures children are able to develop depth in their knowledge and skills over the duration of each of their computing topics. Teachers use the suggested activities as a starting point for the planning of their computing lessons, which are often richly linked to engaging contexts in other subjects and topics. Modules and sequence are modified at Walton Priory Middle School to meet the needs of our community. All children entering Year 5 begin with a bespoke module on basic ICT and Office Software to ensure that they all receive the fundamentals to support their use of technology in other areas of the school regardless of their starting points.

The school has an ICT suite of thirty machines which were upgraded in the Summer of 2023 to ensure they have the hardware and processing required to support the demands of our creative and engaging curriculum. All classes receive forty-five minutes of Computing a week with an additional six-week rotation of a Computing Project throughout the year. The implementation of the curriculum also ensures a balanced coverage of computer science, information technology and digital literacy. The children will have experiences of all three strands in each year group, but the subject knowledge imparted becomes increasingly specific and in depth, with more complex skills being taught, thus ensuring that learning is built upon.

For example, children in Year 5 learn to understand conditional statements through the Kodu STEAM project, this is then transferred into a programming block in Year Six before moving onto subroutines and main routines in Year 7 and in Year 8 they transition away from block statements to text statements through the use of the Python programming language.

## Computing across the curriculum

- Opportunities to use chromebooks and other pieces of hardware are abundant in the planning for other lessons.
- Opportunities to develop subject specific vocabulary are mapped into the planning for Computing across all year groups.
- STEAM projects allow children to develop skills in other areas such as Music, Mathematics and Art.
- Digital Citizenship and E-Safety is additionally covered in PHSE lesson through the Safe and Sound Scheme of work.



## Impact

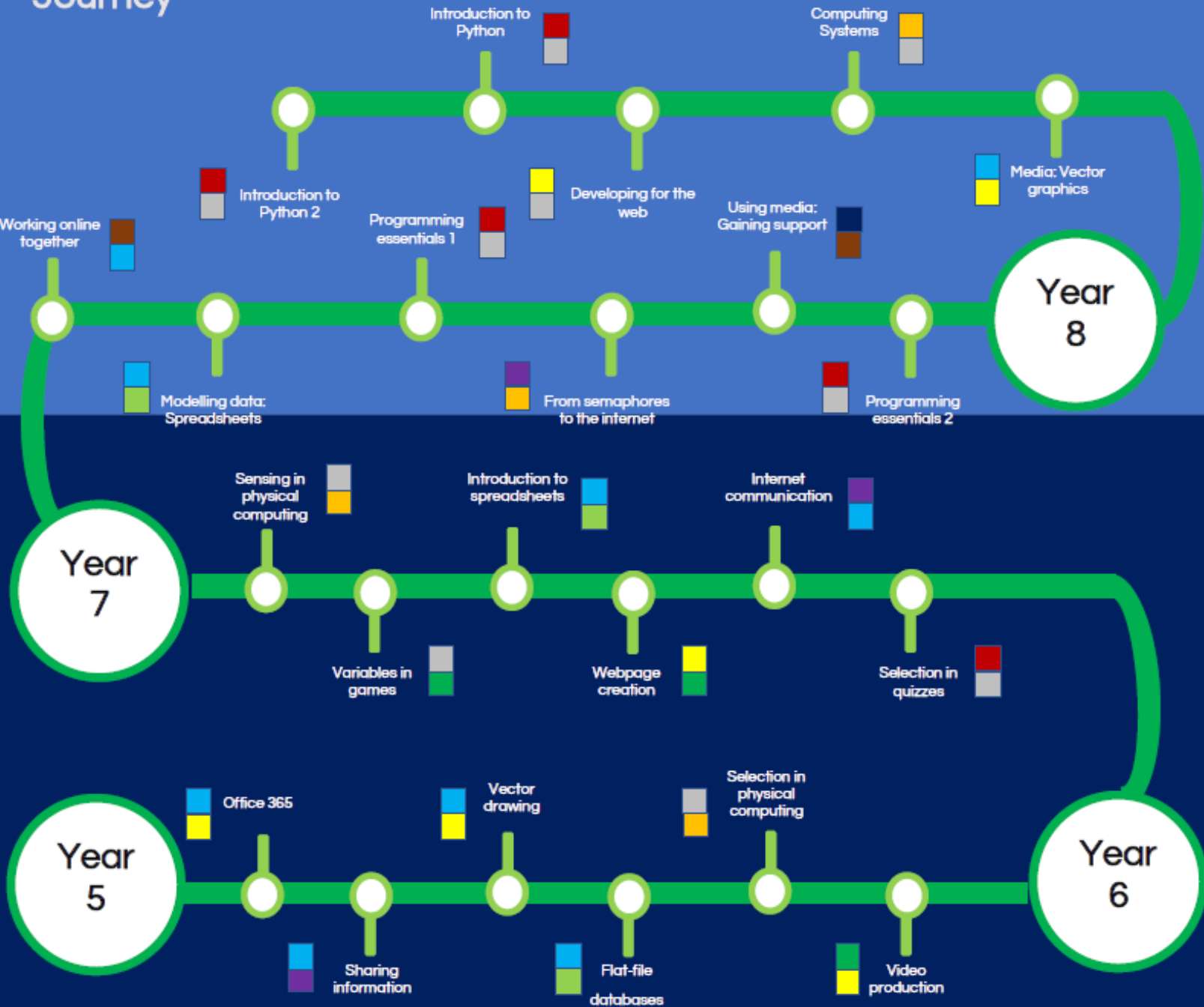
Our approach to the curriculum results in a fun, engaging, and high-quality computing education. The quality of children's learning is evident on the school's secure internal server. Evidence such as this is used to feed into teachers' future planning, and as a topic-based approach continues to be developed, teachers are able to revisit misconceptions and knowledge gaps in computing when teaching other curriculum areas. This supports varied paces of learning and ensures all pupils make good progress. Much of the subject-specific knowledge developed in our computing lessons equip pupils with experiences which will benefit them in secondary school, further education and future workplaces. The opportunities in STEAM projects give the pupils real-world experience of working within a Computer Project that develops over time resulting in an end piece that has required the cultivation of numerous skills drawn from all three strands of Computing. From research methods, use of presentation and creative tools and critical thinking, computing at Walton Priory Middle Primary I gives children the building blocks that enable them to pursue a wide range of interests and vocations in the next stage of their lives.



# Computing Learning Journey

## Curriculum

Key	
<span style="color: red;">■</span>	Algorithms
<span style="color: orange;">■</span>	Computing Systems
<span style="color: yellow;">■</span>	Creating Media
<span style="color: lightgreen;">■</span>	Data and information
<span style="color: green;">■</span>	Design and development
<span style="color: cyan;">■</span>	Effective use of tools
<span style="color: darkblue;">■</span>	Impact of Technology
<span style="color: purple;">■</span>	Networks
<span style="color: grey;">■</span>	Programming
<span style="color: brown;">■</span>	Safety and security





# Computing Learning Journey

## STEAM PROJECTS

Computing STEAM projects at Walton allow our pupils to really develop as 21<sup>st</sup> Century problem solvers as well as giving them an opportunity to experience a range of different Computer related careers. Each project is built to consolidate the skills taught during Curriculum lessons and apply them in a contextually engaging manner.

Year 5

### Kodu Game projects

In this project, children are first introduced to conditions in programming using a child friendly two-step GUI.

They learn to program some popular games such as space invaders, go karting and platformers.

Skills developed: Programming, algorithms, Design and development.



Year 6

### Music and sound effects in Game Design

In this project, children are introduced to the wonderful world of Video Game music.

They learn how music can create immersion and atmosphere before going on to create their own music filled Scratch games.

Skills developed: Programming, algorithms, Design and development.



### Tinkercad 3D design

In this introduction to Computer Aided Design, pupils learn how 3D modelling works to create composite shapes.

From Castles to room and furniture design, the only limit is their imagination. It also allows them to rev

Skills developed: Programming, algorithms, Design and development.



### From clay to magic: Stop Motion

In this project, children use their imagination and photo technology to create their own stop motion films.

Using video editing software, they combine images, sound effects and music to create an engaging story.

Skills developed: Media Creation, Design and development.



Year 8

### Mobile App Development

In this project, our budding computing programmers take on the role of a real app developer. Using industry level software, they set about creating their first apps for mobile devices.

Skills developed: Programming, Design and development.



# How we assess Computing

## Summative assessment

Summative assessment takes place at the end of each module. In some modules this maybe a rubric that outlines the skills required or a written assessment. Teacher's use professional judgment of the child's work in lessons in addition to the end of topic assessments to assign a grade from Emerging – to Mastery +. There are three assessment points throughout the year and the scores are cumulative rather than discrete. For example, a child may receive two secures in the first two modules of the year and this would give them a grade of Developing – at Assessment Point One. Continued Secure grades would lead to a secure grade at Assessment Point Three. This ensures that there is consistency across the school as some modules may be easier to access than others at Assessment Point One which would lead to discrepancies between year group if assessment was discrete.

## Formative assessment

Each lesson has built into it an opportunity to practice the skills from the previous lesson as well as a plenary to identify which pupil's have understood the lesson and which pupils may need additional support in following lessons.

The Computing Department is currently in the process of creating game-based quizzes to help children retain their knowledge and to raise attainment for Pupil Premium and SEN children. An aspiration of the department is to have the Pupil Computing Leaders begin to create quizzes they program themselves based on the topics to aid other children in recall and consolidate new learning.

## STEAM assessment

Computing STEAM projects are not formally assessed and does not contribute to the Design and Technology grades at any of the three assessment points. Instead staff give guidance and verbal feedback to projects as children work to become better problem solvers and Computer Scientists.

## Curriculum on a page

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 5	Office 365	Sharing Information	Vector Drawing	Databases	Programming 1 (Scratch)	Video Editing
Year 6	Programming 2 (Scratch)	Communication on the web	Web page design	Spreadsheets	Programming Variables (Scratch)	Programming Sensing (Microbits)
Year 7	Working online together	Modelling data in spreadsheets	Programming essentials 1	Programming essentials 2	From semaphore to the internet	Using media: Gaining support
Year 8	Vector Graphics	Computer Systems	Developing on the web	Representations	Python	Python

## Year 5 Vertical map

		<b>Subject Concepts</b>	<b>Beacon Student Values</b>	<b>Cultural Capital</b>
<b>Year 5</b>	Office 365	Networks, Creating Media, Data & Information, Design & Development, Computing Systems, Impact of Technology, Algorithms, Programming, Effective Use of Tools, Safety & Security	Participates - listens to instructions and rules, and looks for opportunities to learn new things.	Computer suite. Use of Chromebooks. Use of programmes children may use in future careers. Minecraft club.
	Sharing Information	Networks, Design & Development, Computing Systems, Impact of Technology	Participates - listens to instructions and rules, and looks for opportunities to learn new things.	
	Vector Drawing	Creating Media, Data & Information, Design & Development, Effective Use of Tools	Reflective - Open minded about how IT has an impact on different people/ situations.	
	Video Editing	Creating Media, Design & Development, Computing Systems, Effective Use of Tools, Safety & Security	Reflective/ Respectful - Appreciative of where computing has come from and how it has developed.	
	Databases	Data & Information, Design & Development, Effective Use of Tools	Resourceful - Use resources that would be purposeful.	
	Programming	Design & Development, Algorithms, Programming	Resourceful - Asks good questions and is prepared to fail. Reflective - Considers how they need to improve.	

## Year 6 Vertical map

<b>Year 6</b>	Programming	Design & Development, Algorithms, Programming	Resilient and Resourceful - a topic of uncertainty for most and these values need to be utilised to be as successful as possible.	Computer suite. Use of Chromebooks. Use of programmes children may use in future careers. Minecraft club.
	Communication	Networks, Design & Development, Impact of Technology, Effective Use of Tools	Participates - listens to instructions and rules, and looks for opportunities to learn new things.	
	Web Page	Networks, Creating Media, Design & Development, Impact of Technology, Effective Use of Tools, Safety & Security	Reflective and Resourceful - use learning from previous years to develop knowledge further.	
	Spreadsheets	Creating Media, Data & Information, Programming, Effective Use of Tools	Resilient and Resourceful - a topic of uncertainty for most and these values need to be utilised to be as successful as possible.	
	Variables	Design & Development, Programming	Participates - listens to instructions and rules, and looks for opportunities to learn new things.	

	Sensing	Design & Development, Computing Systems, , Programming	Resourceful - Asks good questions and is prepared to fail. Reflective - Considers how they need to improve.	
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## Year 7 Vertical map

<b>Year 7</b>	Collaboration	Creating Media, Design & Development, Computing Systems, Impact of Technology, Effective Use of Tools, Safety & Security	Resilient and Resourceful - a topic of uncertainty for most and these values need to be utilised to be as successful as possible.	Minecraft club. Future possibility for an Esports team. Computing Suite and Chromebooks for use.
	Spreadsheets	Data & Information, Programming, Effective Use of Tools	Resilient and Resourceful - a topic of uncertainty for most and these values need to be utilised to be as successful as possible.	
	Networks	Networks, Computing Systems, Impact of Technology, Safety & Security	Resourceful - Asks good questions and is prepared to fail. Reflective - Considers how they need to improve.	
	Programming - 2 units	Design & Development, Algorithms, Programming	Resilient - sticks at it and has a positive attitude.	
	Advertising	Creating Media, Design & Development, Impact of Technology, Effective Use of Tools	Participates - listens to instructions and rules, and looks for opportunities to learn new things.	

## Year 8 Vertical map

<b>Year 8</b>	Systems	Data & Information, Computing Systems, Impact of Technology, Programming	Reflective and Resourceful - use learning from previous years to develop knowledge further.	Minecraft club. Future possibility for an Esports team. Computing Suite and Chromebooks for use.
	Developing the Web	Networks, Creating Media, Design & Development, Computing Systems, Impact of Technology, Algorithms, Programming, Effective Use of Tools, Safety & Security	Reflective and Resourceful - use learning from previous years to develop knowledge further.	
	Python	Computing Systems, Algorithms, Programming	Resourceful - Asks good questions and is prepared to fail. Reflective - Considers how they need to improve.	
	Vector Graphics	Creating Media, Data & Information, Design & Development, Effective Use of Tools	Resilient - sticks at it and has a positive attitude.	
	App Development	Design & Development, Algorithms, Programming, Effective Use of Tools	Participates - listens to instructions and rules, and looks for opportunities to learn new things.	

	Representations	Data & Information, Computing Systems	Resourceful - Asks good questions and is prepared to fail. Reflective - Considers how they need to improve.	
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## Assessment map Computing

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 5	Office 365 - Rubric Assessment	Sharing Information - Multiple choice and teacher judgement	Vector Drawing - Rubric assessment	Databases - Multiple choice assessment	Programming 1 - Teacher judgement and multiple choice assessment	Video editing - Rubric assessment
Year 6	Programming 2 - Teacher judgement and Multiple choice assessment	Communication in networks - Multiple choice assessment	Web page design - rubric and teacher judgement	Spreadsheets - Multiple choice assessment and teacher judgement	Programming 2 - Multiple choice assessment	Sensing - Multiple choice assessment and teacher judgement
Year 7	Collaboration - Rubric assessment	Spreadsheets - Multiple choice assessment and rubric	Networks - Multiple choice assessment	Programming 1 - Multiple choice assessment	Programming 2 - Rubric	Using media - Rubric assessment
Year 8	Systems - Multiple choice assessment	Developing for the web - rubric assessment	vector graphics - Rubric assessment	Python - Multiple choice assessment	App development - Rubric assessment	Representations - Multiple choice assessment



# Department of Education: research review series -

## Computing

This review has explored a range of evidence relating to high-quality computing education. It has drawn on research from many different countries and organisations. It also builds from the same research base that underpins the EIF.

Computing education is important for pupils to make sense of and to contribute positively to our technologically diverse world. This review has highlighted approaches to constructing, sequencing and teaching a coherent computing curriculum rich in computer science, information technology and digital literacy to achieve this aim and the aims set out in the national curriculum. Central to this is the importance of identifying and ordering the underlying knowledge that pupils require to make sense of complex ideas or engage in composite tasks or activities within the subject. Computing is rich in these ideas and tasks, so this is essential. To ensure that pupils can make progress through the curriculum, it is important that teachers check this knowledge so that pupils are ready for what comes next.

Computing lessons can place great demands on pupils' working memory. Teaching must work to manage this demand and ensure that pupils can think about the intended subject content. Due to the hierarchical nature of many aspects of computing subject knowledge, it is important that pupils' prior knowledge is considered when planning teaching and in the selection of teaching activities.

In this review, we have focused on the number of specialist staff in schools. The number of subject specialists in computing is low, and there is a lack of new teachers to improve the situation. This will have significant consequences for the quality of education that pupils receive in computing if nothing is done to remedy the situation. This further strengthens the argument for a focus on subject-specific CPD.

