Scarcliffe Primary School

Subject Specific Curriculum Intent – Computing V7

What is computing? - Computing is any activity that uses computers to manage, process and communicate information.
CHILD FRIENDLY: Computing is about using technology to make things easier, better or quicker.

Computing links to our core abilities of: critical thinking and open-mindedness, communication and creativity.

What is the curriculum INTENT for this area of the curriculum?	Rationale – Why is this what you want our children to know?
1. To use computational thinking in designing, writing and debugging programs. 2. To have a thorough knowledge of online safety which equips them for life. 3. To use search technologies effectively. 4. To safely produce and consume digital literacy. 5. Use information technology purposefully to be able to present and communicate work using a variety of software to design and create a range of outcomes suitable for the purpose and audience.	1. Computational thinking is the basis for all computing, developing this skill will help children become successful programmers. 2. Online Safety remains the largest reason for calls to NSPCC. Children are surrounded by social media and are exposed to risks online on a daily basis. We have a duty to prepare them for this. 3. So much information is on the internet that it has become the main way of gathering information. Children therefore need to know how to find this data and judge its accuracy. 4. Digital literacy is a part of everyday life for children. They need to be both critical consumers of this as well as producers. 5. We are preparing the children for a world where most jobs will involve the form of some type of communication through a range of information technology. It is essential we give the children the skills so they can transfer these in to their working world environment.

<table>
<tr><th></th><th></th><th>Class 1</th><th>Class 2</th><th>Class 3</th><th>Class 4</th></tr>
<tr><td rowspan="2">A Computer Science</td><td>Programming, coding and controlling (Year 1)</td><td rowspan="2">1. Explore a range of control toys and devices such as sound recording devices, music players, digital recording devices (Continuous Provision)
2. Explore outcomes when individual buttons are pressed on a programmable device
3. Explore an on-screen character (e.g. BeeBot) and navigate it around a course or grid. While navigating around a course on a computer, predict what will happen once the next command is entered
4. Solve simple problems by following instructions to move objects on screen or devices in the classroom (E.g. Beebot)
5. Create a series of instructions to move their peers/toys around a course using simple planning aids e.g. a series of cards used to remember and recall the order of instructions (code)
6. Talk about how devices need instructions to work and talk about common devices in school and in the home

Beebot (Screen and Floor)
J2e - Turtle</td><td rowspan="2">7. Talk about and demonstrate how everyday devices can be controlled through the use of remote control e.g. TV, DVD, cameras, projectors, automated doors and screens etc.
8. Use a series of cards or written instructions to plan and/or record the sequence of instructions, understand the need for precise language e.g. forward, backward, right, left, turn, angle
9. Through different cross curricular opportunities create a series of instructions to program objects to move, to solve specific problems:
10. Understand that this is coding
11. Talk about what each part of the code does
12. Ensure that by testing, any bugs in the code are resolved (debugging)
13. Discuss devices that have been programmed and need code such as domestic appliances, games, Apps in order to operate successfully.

Scratch Junior
Purple Mash Coding (Chimp)</td><td>14. Investigate how everyday devices are controlled using inputs and outputs e.g. automatic doors, kettle, traffic lights, microwave oven
15. Draw flow diagrams, (algorithms), to show how everyday devices work (e.g. Ring door bell – motion detected, message sent to user's phone, app opened, video displayed, user can speak through devise).
16. Solve open ended problems with an on-screen program (logo)
17. Explore repetitions and selection to shorten the code
18. Plan, create and debug more complex sequences of instructions to achieve a specific outcome
19. Understand that outputs can be controlled using code

Crumble / Scratch / Logo</td><td rowspan="2">20. Find errors and improve given code (debug)
21. Create flow diagrams to explain what is happening and illustrate how control impacts on our daily lives.
22. (E.g. Carpark: sensor detects a car, screen displays message, user presses a button, ticket is dispensed, barrier open, sensor detects car has passed, barrier closes).
23. Build code to create a game which includes inputs and outputs and make use of:
- Values and/or variables
- If. . . . then conditional commands
24. Refine procedures to improve desired outcomes through the use of loops or repeats
25. Evaluate, test and debug the code explaining the processes

Scratch
Crumble
31. Undertake creative projects using procedures and variables to achieve specific goals.
32. Build a sequence of instructions to control a device, simulation, App or game with inputs and outputs which includes:
- Values, including random numbers
- If . . . then conditional commands
- Variables
33. Explain the purpose and function of the code in the project

Scratch
Crumble</td></tr>
<tr><td>Programming, coding and controlling (Year 2)</td><td>26. Understand how code is used to control physical systems in the real world e.g. bar codes, cash machines, TV control and drink dispensers
27. Create, test, edit, save their own code enabling the onscreen sprite (or physical Crumble component) to carry out a specific task by using conditional If, repeats and loops
28. Build sequences of instructions to create code to solve specific problems being aware of the need for accuracy
29. Draw more complex patterns using repeats and loops by shortening the code to create procedures
30. Debug my own code and the code of others

Scratch / Logo / Crumble</td></tr>
<tr><td>B Digital Literacy</td><td>Online Safety – PROJECT EVOLVE</td><td>• Self-image and Identify
• Online Relationships
• Online reputation
• Online Bullying
• Managing online information
• Health and well-being and lifestyle
• Privacy and security
• Copyright and Ownership

Year 1 – cover EYFS activities
Year 2 – Cover Y1 activities</td><td>• Self-image and Identify
• Online Relationships
• Online reputation
• Online Bullying
• Managing online information
• Health and well-being and lifestyle
• Privacy and security
• Copyright and Ownership

Year 1 – cover Y2 activities
Year 2 – Cover Y3 activities</td><td>• Self-image and Identify
• Online Relationships
• Online reputation
• Online Bullying
• Managing online information
• Health and well-being and lifestyle
• Privacy and security
• Copyright and Ownership

Year 1 – cover Y4 activities
Year 2 – Cover Y5 activities</td><td>• Self-image and Identify
• Online Relationships
• Online reputation
• Online Bullying
• Managing online information
• Health and well-being and lifestyle
• Privacy and security
• Copyright and Ownership

Year 1 and 2 – Cover Year 6 activities leaving lots of opportunity for discussion.</td></tr>
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Many objectives are based on Wokingham Borough Council's Computing Curriculum

	Communication and collaboration	1. Talk about how to communicate safely and respectfully using different technologies and tools 2. Talk about and learn the school's e-safety rules	3. Talk about how to communicate safely and respectfully 4. Talk about e-safety rules where to go for help and support when they have concerns about content or contact on the Internet or other online technologies 5. Make use of collaborative workspace such as Seesaw to share content based on a topic or area of interest ***Seesaw***	6. Discuss other methods of communication and the importance of appropriate behaviour and personal safety at home and school 7. Compose and respond online with their own ideas, considering audience and appropriate language and personal safety 8. Publish best pieces of work online (when publishing, refer to the Multimedia unit.) ***Seesaw and/or class webpage*** ***Purple Mash – 2email***	9. Discuss the different styles of language, layout and format of different electronic communications 10. Use programs like Book Creator to design their own content that can be shared online. Use a range of skills (such as hyperlinks, embedding video, tables, flash files, games) 11. Contribute/edit/refine from self and peer evaluation wiki / blog entries and ensure comments are supportive and appropriate. ***Create content for a webpage to share work – link to multimedia.***
C Digital Literacy	**Digital Exploration – Using the Internet**	1. Talk about their use of ICT and other methods to find information 2. Select the appropriate buttons to navigate given web sites 3. Begin to understand they have to abide by school rules on Internet safety e.g. only navigate to given pages 4. Begin to understand where their work is being stored	5. Recognise that some information is more useful than others 6. Navigate using the key features of both a web page and a web browser (such as Internet Explorer) 7. Use given web based resources to find out answers to questions about a specific topic 8. Use a safe search engine (e.g. Swiggle) to find answers to specific questions 9. Understand the importance of abiding by school rules on Internet safety 10. Discuss where to go for help and support when they have concerns about content	11. Select key words from a theme to consider how relevant each search term will be 12. Scan through search results and decide which is the most relevant result, consider how some searches are ranked 13. Search, evaluate results, re-search for a particular piece of information through modifying the search terms (Swiggle) 14. Understand that web sites have a specific address e.g. www.bbc.co.uk/ and understand that they can be copied and pasted to create hyperlinks 15. Be aware that web sites are not always accurate and that information should be checked before it is used 16. Be confident in how to respond to inappropriate material on screen and consider actions at home as well as school.	17. Acknowledge the source when taking pictures, text and sound from the Internet 18. Check the plausibility, bias and accuracy of information by using information from more than one source 19. Understand how search engines tailor results to the user through the use of cookies, ranking and paid-for results 20. Talk about where web content might originate by looking at web address 21. Discuss responsible use of all connected devices and why the school has e-safety rules
Information Technology	**D Multimedia**	1. Use keyboard spacebar, backspace, shift, enter, to provide text on screen that is clear and error free 2. Select or create appropriate images to illustrate cross-curricular work 3. Begin to select or record a sound to add to their work 4. Add text to photographs, graphics (images) and sound e.g. captions, labelling and simple sentences 5. Use pre-defined layouts or templates for presentations or published work (e.g. comic books, information texts) 6. Begin to explain why their choices have been made ***Word*** ***Book Creator – iPads*** ***Purple Mash – 2Create a Story (My simple story)*** ***J2 Data Write***	7. Develop basic editing skills including different presentational features (font size, colour and style) 8. Select from different presentational features e.g. title, paragraph, label etc. 9. Use appropriate editing tools to improve and correct their work 10. Make use of graphics (see digital imagery below), graphic animations and sound to enhance their work 11. Talk about their use of graphics and sound and how it may enhance or change the mood and atmosphere of their presentation and make changes where appropriate 12. Choose different layouts for different purposes ***Word – build on Class 1*** ***Purple Mash (E.g. Mary Seacole writing template)*** ***Book Creator***	13. Recognise key features of layout and design and discuss what makes a good design 14. Consider design and style features in their layout and select appropriate fonts, colour and features to suit the context 15. Select and import sounds, video clips and graphics to include in their presentations 16. Know the risks attached to seeking resources on the Internet 17. Be aware of copyright and plagiarism when creating presentations 18. Use hyperlinks to link to web pages or other pages whilst being aware of e-safety requirements (see Digital Exploration) 19. Through peer assessment and self-evaluation amend and improve work by considering style, purposes and audience and make necessary changes ***Publisher / PowerPoint*** ***Book Creator***	20. Introduce choice when creating non-linear presentations so that the viewer can choose where to go within the presentation 21. Create a page of sounds which are activated by appropriately named and positioned action buttons 22. Carefully consider design and style features in their layout and select appropriate fonts, colour and features to ensure outcomes achieve the intended purpose (e.g. a leaflet on Publisher). 23. Choose and evaluate appropriate techniques to create an effective and well-polished piece of work considering purpose and intended audience ***Publisher - Web Pages*** ***Vector Drawings - Scratch***

	E Digital imagery	**Graphics Packages** 1. Use a paint package to create a picture using a variety of tools to communicate their ideas 2. Explore shape, line and colour to communicate a specific idea 3. X ***2Paint – Purple Mash*** **Film and photo** 4. Use a device to take a picture or record their work 5. Talk about the images or film they have taken and the tools used 6. Talk about how images can be shared and who might see them ***iPads***	**Graphics Packages** 7. Acquire, store and retrieve images from devices or Internet. Edit using paint packages or photo-manipulation software to change and manipulate an image (e.g. copy/paste/crop/make a stamp) 8. Through peer assessment and self-evaluation, evaluate and suggest suitable improvements ***Book creator*** ***Purple Mash – 2Create a Story (My story)*** ***Pic Collage / Moldiv*** **Digital Imagery** 9. Begin to take pictures or video thinking about the purpose of the image and recording 10. Make choices such as landscape and portrait using the enhanced tools 11. Discuss and evaluate the quality of their own captured images and make decisions (e.g. keep, delete, change) 12. Use images or video clips in their multimedia unit 13. Build their awareness of sharing images online – consider what is personal and what might need permission ***iPads for photography*** ***Pic Collage / Moldiv***	**Animation** 14. Create a sequence of still images which together form a short animated sequence 15. Share their work online (Seesaw – see communication and collaboration) 16. Talk about who might see the images and what is safe to share – and with whom ***iMotion (App Store)*** **Graphics Packages** 17. Begin to enhance a presentation by acquiring, storing and retrieving images from different sources 18. Through peer assessment and self-evaluation, evaluate and make suitable improvements 19. Talk about their choices and changes they have made to achieve a specific outcome or purpose **Digital Imagery – Including Video** 20. Using devices to take pictures and video, thinking about the purpose of the image and controlling the device appropriately 21. Talk about different films and how they are directed to create different moods and effects 22. Plan (storyboard), edit, combine and still and moving images to create a short film or trailer. Add titles, credits and music 23. Understand how films are shared online consider the issues of appropriateness and privacy as they build their awareness of safe sharing online ***iMovie***	**Digital Video** 24. To use different filming techniques and camera angles e.g. zoom, panning, wide shots - to create a different mood or perspective **25.** Develop an awareness of purpose and audience through evaluation and editing ***iMovie or Movie Maker*** **Animation (Long Unit)** 26. Consider different types of animation (stop motion, computer generated) Plan and create an animated sequence to communicate a specific idea, or tell a story. Develop a storyboard create animation, add titles, credits and sound effects. 27. Children discuss and evaluate their own and others' animations and refine them for a given audience or task ***iMotion (iPads)***
Information Technology	**F Music and Sound**	1. Explore a range of electronic music and sound devices including software and different peripherals 2. Talk about the sound when they share their recordings with the rest of the class ***Recording devices in continuous provision*** ***Sound recorder – iPad, 2Create a story and Seesaw***	3. Select and use devices for recording sound for a specific purpose – laptops and iPads. 4. Use software to explore sound and musical phrases, create edit and refine musical phrases for a specific purpose and talk about their choices 5. Exploring a range of sounds on an electronic instrument and choose appropriate sounds for a purpose 6. Use the sound features of programs to add to their work e.g. 2create a story (see above) ***Chrome Music Lab*** ***2 Create a Story (revisit from above to add sounds)?*** ***Book Creator*** ***Seesaw***	7. Record their voice and other sounds using the sound recording tool to add to their presentations or information 8. Use technology to combine and layer sounds to create sound stories or backing tracks 9. Share work on the internet for others to play and review (Seesaw) 10. Know the school's e-safety rules and the risks involved when sharing resources on the Internet ***PowerPoint – link to Multimedia*** ***iMovie – Link to Digital Imagery***	11. Use music software to organise and reorganise musical phrases to create a piece of music for a theme 12. Create their own sounds and compositions to add to their presentations/films/images/photos 13. Begin to have an awareness of different sound file formats. – e.g. MP3 files are smaller than WAVs and may be more suited to import into a multimedia presentation **Podcasting** (longer unit) 14. Plan and create a broadcast considering genre and style 15. Record and edit a radio style broadcast use sound manipulation software to edit their broadcast considering audience and style 16. Upload their work on the internet for self and peer evaluation (Website or Seesaw) 17. Know the risks in uploading resources to the Internet ***Audacity/ Garage Band*** ***(See Everyone can create music document)***

	G Data	18. Explore different ways of sorting objects on screen 19. Compare on screen activities with pencil and paper methods or sorting real objects 20. Create a pictogram to represent the data the class has collected on themselves or linked with a topic and use it to answer questions 21. Use a password to access information and know it needs to be kept safe ***Purple Mash – Pictograms*** ***J2e - Pictograms***	22. Create pictograms, charts and graphs in a variety of curriculum contexts, adding labels and numbers as appropriate 23. Talk about how ICT helps them to organise their information, edit and make rapid changes 24. Use charts and graphs to both create and answer questions 25. Use a password to access systems and talk about why they must not be shared 26. Know that some personal information must not be shared with others and that they need permission to make changes ***Purple Mash – 2graph*** ***J2Data***	27. Determine the data needed to answer a specific question; organise, present, analyse and interpret the data in tables, diagrams, tally charts, pictograms and bar charts using a graphing package or a database where appropriate 28. Use a data logger or measuring App (sound level monitor) to log discrete and continuous data. Understand the difference between discrete and continuous data 29. Interpret the data collected to see patterns, describe events and answer questions 30. Enter data into a spreadsheet and illustrate choosing the most appropriate chart 31. Understand that a spreadsheet can perform calculations on the data held within it (design a simple calculator – for example: area of a rectangle) 32. Create a simple branching database (2Question – Purple Mash) 33. Know that personal data is stored on systems, discuss the need to keep it safe with passwords and other devices (finger print, security cards, iris scans) ***Excel - introduction*** ***Purple Mash – 2Question (Branching databases)***	**Spreadsheets** 34. Use frequency tables, pictograms, bar graphs and line graphs representing the frequencies of events and changes over time, use ICT to present and highlight features that lead to further questions 35. Model a familiar situation using appropriate formulae in a spreadsheet e.g. a birthday party or Christmas present list ***Excel – Build on Class 3*** **Databases** 36. Understand the importance of accuracy when collecting and entering data into a database 37. Independently collect and organise data in an efficient and accurate way by designing fields and records in a database 38. Interpret data by using a range of searches, sorting , filtering and graphing and check for accuracy 39. Make simple searches using **and/or/>/<** to search data when looking for relationships and patterns in data ***Purple Mash – 2Investigate (Databases)***
	H – Understanding Systems and Networks	1. Locate technology in the classroom and explain how it helps us. 2. Name the main parts of a computer. 3. Develop mouse and keyboard skills. 4. Know how to use a computer responsibly. ***Objectives taken from Teach Computing – Unit 1 (year 1). Implementation covered mainly in Autumn 1 instead of the Project Evolve session. Mouse and keyboard skills further developed through C.P. Statement 4 covered through Project Evolve session content.***	5. Recognise the uses and features of information technology (IT) and that a computer is part of IT. 6. Identify and discuss the uses of IT in school and in the world. 7. Explain how IT helps us. 8. Understand that choices are made when using IT and explain how to use IT safely. ***Objectives taken from Teach Computing – Unit 1 (Year 2). Implementation covered mainly in Autumn 1 instead of the Project Evolve session. Statement 8 covered through Project Evolve session content.***	9. Describe how networks physically connect to other networks. 10. Recognise how networked devices make up the internet. 11. Describe how content can be added to the World Wide Web (www). 12. Evaluate the reliability of information found online. ***Objectives taken from Teach Computing – Unit 1 (Year 4). Statement 9 and 10 covered in Autumn 1 instead of the Project Evolve session. Statement 11 and 12 covered through Project Evolve session content and revisited through topic sessions when searching online.***	13. Explain that computers can be connected together to form systems and that computers communicate with other devices. 14. Recognise the role of computer systems in our lives. 15. Understand how search engines select and rank results. 16. Explain the importance of internet addresses. 17. Understand the concept of data packets. ***Objectives taken from Teach Computing – Unit 1 (13-15 from Y5 and 16-17 from Y6). Statements covered in Autumn 1 instead of the Project Evolve session. Statement 15 revisited through topic sessions when searching online.***
IMPLEMENTATION	Every year, a term's science timetabled session is dedicated to computer science (or programming, coding and controlling). Teachers use the intent to plan a series of lessons to deliver the objectives over the course of the term. (Approx. 12 hours per year) Digital exploration is taught through cross-curricular links. There is no specific unit on this aspect of computing but teachers are expected to ensure children have a good understanding of this aspect of the curriculum. Each week, an assembly slot is dedicated to delivery of key messages in relation to online safety. These are delivered in classes so messages are age-appropriate. Teachers use the activities and resources on PROJECT EVOLVE to deliver these in the order shown. (Approx 15 mins per week or 10 hours per year) Every long term (so three times per year) teachers will have a computing day and will cover one of the four Information Technology units – Multimedia, digital imagery, music and sound or data. Over a two-year cycle, these should all be delivered once. Multimedia and digital imagery should be covered twice. When publishing work (in order to support having a purpose and audience) objectives in the Communication and Collaboration section of the intent need to be planned for. (Approx 6 hours per term or 18 hours per year). During these days, a typical model might be to learn the skills in the morning and apply them to an outcome during the afternoon. Total hours per year is approximately 40 hours (equal to 1 hour per week). In addition to the above, computing will be integrated in to the curriculum as appropriate. For example, many of the data objectives can be taught or revisited through science. **Project Evolve Assemblies** planned to be delivered as follows: Class 1 = Wednesday (assembly time) Class 2 = Tuesday (assembly time) Class 3 – Tuesday (9:30am) Class 4 – Tuesday (First thing / morning work). **In Autumn 1, most classes substitute this Project Evolve timeslot for Section H of the intent document – understanding networks and systems.**			

Useful apps and websites:

https://www.bbc.co.uk/bitesize/topics/zf2f9j6/articles/z3c6tfr - Game to teach children how to touch type.

J2Data https://www.j2e.com/j2data/ – Pictograms, graphs and branching database introductions

Teach Computing – Planning documentation and CPD for staff
https://teachcomputing.org/curriculum

EYFS and other Key Stages Computing Curriculum Ideas and Support
https://www.barefootcomputing.org/

Resources to support coding
http://code-it.co.uk/

Free resources to support curriculum
https://padlet.com/computingwork/freeware

Watch OfSTED briefing https://www.youtube.com/watch?v=C7ZfA0FJCq8&t=24s

TO ADD – Computer Science – How do computers work. Could add as part of the whole day – e.g. the morning could be on this and the afternoon on digital imagery. Could be taught in Aut 1 as the Evolve assembly or linked in to all computing lessons.

KEY PRIORITIES FOR ACTION PLAN

1. Staff and subject leader knowledge audit
2. Staff and subject leader knowledge development
3. Implementation of the new curriculum
4. Evidencing the new curriculum – links to saving work on Seesaw. If children do the work then they save it to Seesaw. If the adult does it, then they save to Seesaw and add to all pupil folders.

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