



THE ARUN VILLAGES FEDERATION

Enabling every child to thrive and succeed

Threshold Concepts Attainment Map in Computing

	EYFS	EYFS	EYFS	Year 3/4	Year 4/5	Year 5/6
	<p><u>Emerging</u> <u>40-60</u> <u>months:</u> Completes a simple program on a computer. Uses ICT hardware to interact with age-appropriate computer software.</p>	<p><u>Expected ELG:</u> Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.</p>	<p><u>Exceeding:</u> Children find out about and use a range of everyday technology. They select appropriate applications that support an identified need – for example in deciding how best to make a record of a special event in their lives, such as a journey on a steam train.</p>			



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TEXT AND MULTIMEDIA		Work with others and with support to contribute to a digital class resource which includes text, graphic and sound.	Generate their own work, (with help where appropriate with multimedia) combining text, graphics and sound. Save and retrieve and edit their work.	Record and present information integrating a range of appropriate media combining text and graphics in printable form and sound and video for on-screen presentations which include hyperlinks. Begin to show an awareness of the intended audience and seek feed-back.	Use advanced tools in word processing/DTP software such as tabs, appropriate text formatting, line spacing etc appropriately to create quality presentations appropriate for a known audience.	Multimedia work shows restrained use of effects that help to convey meaning rather than impress.
DIGITAL IMAGES		Use a range of simple tools in a paint package / image manipulation software to create / modify a picture.	Use a range of tools in a paint package/image manipulation software to create /modify a picture to communicate an idea. Create a simple animation to tell a story.	Manipulate digital images using a range of tools in appropriate software to convey a specific mood or idea.	Make a short film/animation from images (still and / or moving) that they have sourced, captured or created.	Use images that they have sourced/captured / manipulated as part of a bigger project (eg presentation or document).



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SOUND AND MUSIC		Chose suitable sounds from a bank to express their ideas. Record short speech.	Compose music from icons. Produce a simple presentation incorporating sounds the children have captured, or created.	Create a simple podcast, selecting and importing already existing music and sound effects as well as recording their own.	Create multiple track compositions that contain a variety of sounds.	Create and share more sophisticated podcasts and consider the effect that their podcasts will have on the audience.
ELECTRONIC COMMUNICATION		Contribute ideas to a class email to another class / school etc.	Work collaboratively by email to share and request information of another class or story character.	Begin to understand the need to abide by school e-safety rules.	Share ICT work they have done electronically by email, VLE, or uploading to authorised sites. Where possible seek and respond to feedback.	Contribute ideas to a class email to another class /school etc.



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RESEARCH AND E-SAFETY		As a class exercise children explore information from a variety of sources (electronic, paper based, observations of the world around them, etc.). They show an awareness of different forms of information	Children use a search engine to find specific relevant information to use in a presentation for a topic. They save and retrieve their work.	Using another curriculum area as a starting point, children ask their own questions then use ICT sources to find answers, making use of search engines, an index, menu, hyperlinks as appropriate. Children use the information or resources they have found. Children talk about using ICT to find information / resources noting any frustrations and showing an emerging understanding of internet safety.	Make use of copy and paste, beginning to understand the purpose of copyright regulations and the need to repurpose information for a particular audience. They show an understanding that not all information on the internet is accurate. Develop a growing awareness of how to stay safe when using the internet (in school and at home) and that they abide by the school's internet safety policy.	Independently and with due regard for safety, search the internet using a variety of techniques to find a range of information and resources on a specific topic. Use appropriate methods to validate information and check for bias and accuracy. Repurpose and make appropriate use of selected resources for a given audiences, acknowledging material used where appropriate.



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CONTROL		Control simple everyday devices to make them produce different outcomes.	Control a device, on and off screen, making predictions about the effect their programming will have. Children can plan ahead.	Children are able to type a short sequence of instructions and to plan ahead when programming devices on and off screen.	Engage in Logo based problem solving activities that require children to write procedures etc. and to predict, test and modify. Use control software to control devices (using output commands) or to simulate this on screen. Predict, test and refine their programming.	Independently create sequences of commands to control devices in response to sensing (i.e. use inputs as well as outputs). Design, build, test, evaluate and modify the system; ensuring that it is fit for purpose.



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COMPUTING VOCABULARY MAP

E-Safety						
EYFS	Year 1	Year 2	Year 3 and Year 4	Year 5 and Year 6		
Choices Internet Website	Rules Online Private information Email	Appropriate/inappropriate sites Cyber-bullying Digital footprint Keyword searching	E-safety rules Secure passwords Report abuse button Gaming Blogs	Responsible online communication Informed choices Virus threats Blogs Messaging		
Programming						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Equipment Buttons Movement	Instructions Buttons Robots Patterns Program	Forward Backward Right-angle turn Algorithm Sequence Debug Predict	Sequence instructions Sequence debugging Test + improve Logo commands Sequence programming	Type + edit logo commands Sensors Open-ended problems Bugs in programs Complex programming	Explore procedures Refine procedures Variable Hardware + software control Change inputs Different outputs Articulate solutions Commands	Predicting outputs Plan, program, test & review a program Program writing Control mimics+ devices Sensors Measure input Create variables Link errors



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COMPUTING VOCABULARY MAP

Multimedia						
EVFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Screen Mouse Images Keyboard Paint	Videos Camera skills Sounds Image bank Word bank Space bar	Paint effects Templates Animation Documents Index finger typing Enter/return Caps lock Backspace	Multimedia Presentations Alignment Brush size Repeats Reflections Green screening Amend Copy Paste	Creating + modifying Specific purpose Photo modifying Keyboard shortcuts Bullet points Spell check Constructive feedback	Online sharing Multimedia effects Multimedia modification Transitions Hyperlinks Editing tools Refining Online sharing	Appropriate online tools Audience Atmosphere Structure Copyright Information collection HTML code Storing
Technology in Our Lives						
EVFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technology Share Create Internet	Purpose Online tools Communicate	Information sources Communication Purposes Website content	School network Devices Computer parts Collaborate Appropriate online communication Search tools Appropriate websites Owner	Different networks Information collection Reliability Owners	Computing devices Internet parts Collaboration Responsibility Searching strategies Webpages	Information movement Connecting devices Different audiences Research strategies Search result rankings Acknowledge resources
Data Handling						
EVFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Collect Set of photos Count Organize	Photographs Video Sound Data Pictogram Digitally	Capturing moments Magnified images Questions Data collection Graphs Charts Save Retrieve	Questioning Database Construct Contribute Recording data Data logger Present data	Database creation Database searches Inaccurate data	Spreadsheets Complex searches (and/or: </>) Problem solving Present answers Analyse information Question data Interpret	Generate Process Interpret Store Present information Plausibility Appropriate data tool Interrogate Investigations



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Examples of Deeper Thinking Questioning:

Bloom's Taxonomy Questions

Here are a few ideas with an example to support with creating questions or next steps to develop the children's deeper thinking of computing.

- **Odd one out-** Show a mouse, key board and a ipad. Which is the odd one out?
- **Sometimes, always, never-** If I was unsure about something, I saw on the internet I would report it to an adult?
- **True or False-** I can click any button on a beebot and it will move forward.
- **Convince me (Convince me that I need to be safe on the internet)**
- **Statements-** I can take a picture of anyone and put it on the computer
- **Prove it-** Prove that algorithms need to be put in the correct order.
- **What's the same/difference?**
- **Statements-** Josie thinks all technology needs the internet to work. Do you agree/disagree? Why? Give examples.



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Examples of Greater Depth Computing Challenges:

EYFS	Year one	Year Two	Year Three	Year Four	Year Five	Year Six
	<ul style="list-style-type: none"> Can they use and apply logical thinking to solve a problem involving programming? (e.g. programming a toy) Can they use digital technology to organise and edit content? (e.g. text in an app, editing images) Can they apply their navigational skills for a specific function or purpose? (e.g. capturing a photo in the Camera app and importing this into another appropriate app) 	<ul style="list-style-type: none"> Can they appreciate that some algorithms are more efficient than others and use methods of efficiency to test these? (e.g. most efficient method to enable a sprite to move left and right along the x axis or up and down along the y axis) Can they use digital technology to create, organise and edit a range of content for a specific purpose using an appropriate app? Can they consider how text is presented and formatted and adapt this to suit the purpose of a document? 	<ul style="list-style-type: none"> Can they recognise the impact of keyword choice on search engine results? (e.g. results ranked according to relevance or reliability of content and credibility of sources) Can they evaluate content (created/researched) against a given goal? 	<ul style="list-style-type: none"> Can they design and create content on a computer in response to a given goal, paying attention to the needs of a known audience? (e.g. digital artwork linked to their topic, themes or core text) Can they give reasons for errors in programs and explain how they have corrected these through decomposition and debugging? Can they explain an algorithm using sequence, repetition and selection in their own words? 	<ul style="list-style-type: none"> Can they create a multimedia project that contains an appropriately selected range of media? (e.g. audio, video clips) Can they save an image using a range of commands? (e.g. 'control' and 'save image as' or 'drag and drop to 'downloads' folder) Can evaluate content according to its effectiveness and impact on a target audience? Can they write programs that have sequences, repetitions and variables? (e.g. creating a scoring system as part of a Scratch game) Do they consider audience when editing media and justify their choices? 	<ul style="list-style-type: none"> Can they incorporate images within a document or project where appropriate, using the most effective text wrapping formats within documents? (e.g. selecting 'wrap to text' or layering images in the Photoshop app) Can they compare the information provided on two tabbed websites looking for bias and perspective? (e.g. evaluating the source of content, reliability and credibility of content, sharing information on secure and encrypted websites) Can they apply a range of logical and computational thinking to program robotics and simulate this using an appropriate?