Computing Curriculum

These units of work can be moved around to suit a school's own curriculum. Each year or cycle is broadly arranged around 3 or 4 core units with ongoing focus on internet safety. Several units are designed to fit with the science curriculum units published as part of this project. It is intended that where possible, teaching of word processing, internet searches and presentation of information are taught through other curriculum areas. Decisions about which year groups such skills are introduced are for schools specific discretion.

Key Stage 1

Cycle A			
Objectives	Software/hardware	Suggested link	Guidance
Understand algorithms, how they are used and how they control devices. Create and debug simple programs.	BeeBots Roamer Probots(Higher level Beebot)	Science (animals including humans) Geography	Children need to: Give each other instructions to follow a simple path. Correct an error made by a child. E.g. Follow a path to a flower/route for a minibeast. Give directions towards a point in the classroom. Program Beebot to follow a simple path across the floor to a target (e.g. a Flower) Debug a mistake in the Beebot program. (Teacher can initiate a mistake if necessary, or move the flower to a different location so children need to change the program in BeeBot)
Use technology purposefully to create, organise and store digital information.	Photo Story using internal mics iPads Laptops Webcams	English History	Children can: Create a simple sound bite or video. Read a simple story into an iPad, portable mic or laptop, or film a picture book and tell the story. Film a story being read and turn the pages so it can be recorded and presented to the class. Narrate and/or film a simple route around the classroom.
Uses of information technology beyond the school.	Number Box 2Simple	Maths Science	Discuss how people and organisations need to collect and display information. Create a simple chart or pictogram to illustrate findings from a science observation – e.g. bug hunt (Animals including humans), different types of flowers at times of year (Changes through the seasons), names and numbers of different trees around the school

			(Living things and their habitats) Collect data about the months of children's birthdays within class and display in a simple chart.
Use logical reasoning to predict the behaviour of simple programs (simulations)	BBC Science Simulations bbc.co.uk/schools/	Science (plant s and how they grow)	Use online simulations to illustrate the processes already observed through the science curriculum. E.g. order the stages of growth of a plant from a seed. Discuss with the children the use of online and digital simulations. What can they be used for? Are they always accurate?

Cycle B			
Objectives	Software/hardware	Suggested link	Guidance
Use technology safely and respectfully, keeping personal information private. Where to go for support or help.	ThinkUKNow – Hector Protector	PSHE	How do people stay safe in the real world? How can this help you keep safe in the virtual world? Making comparisons. E.g. you lock your door at home to keep strangers out, what do you do with a computer? What do you do if you see something you don't like/ what do you do if you see something you don't like online.
Use technology purposefully to create, store, manipulate and retrieve information.	Tux Paint – Free download 2Simple 2Paint Paint Revelation Natural Art	Art Science Maths	Use a piece of graphics software to create, e.g. greetings cards, image of a tree/flower/animal. Reflect an image ('butterfly print') Links can be made to celebrations with R.E curriculum, seasonal change or art work being covered in links with topic work.
use technology purposefully to create, organise, store, manipulate and retrieve digital content	Any word processing software www.switcheroozoo.com	English	Write a simple story and add pictures. Create labels to add information to pictures children have created or been involved in. Teach children the skills associated with word processing (font, text related) Use websites such as switcheroozoo.com for stimulus and chances for creative writing. Write information on an animal they make up. How to care for it, what it eats etc…

Manipulating and retrieving digital content, recognising use of computing beyond school	2Animate Digital Blue	Art Science English	Create a simple animation by drawing a simple tree and adding to it, using ICT to show the gradual change created by the changing image. Take a photo of the same tree weekly and create an animated sequence. Take a stop motion of a flowering plant throughout the day (movement with the sun) Create instructions (storyboard) as a link with English units e.g. making a piece of toast, planting a seed.

Lower KS2

Cycle A			
Objectives	Software/hardware	Suggested link	Guidance
Use technology safely, respectfully and responsibly. Understand computer networks including the Internet. Opportunities for communication and collaboration.	Internet and suitable software to present the information. www.oranchak.com/againbutslower.com (child friendly Wikipedia converter)	English Science History PSHE	Using the 'Tree Octopus' or 'All About Explorers' hoax websites get the children to produce an information document (e.g. a factsheet). *This has to be a time limited blocked piece of work so children don't independently discover the hoax (e.g. at home).* Once the work is completed then introduce the children to the fact that all online information might not be accurate. Teaching children to use a variety of sources for their information. Revision of Internet safety. Follow-up with a topic-based research project in which children check validity of sites before choosing information.
Select and use a variety of software to design digital content and present information	Comic Life Digital camera	English/PSHE	Create a comic strip of a visit or a piece of themed work. Use images the children have taken or the teacher has taken to create an information guide to what they have seen or learnt. Use speech bubbles and captions for the children to add in memories of factual details.
Understand networks and opportunities for communication and collaboration	Number box at higher level. Excel	PSHE Cross-curricular	Create surveys and data analysis from findings. Children might complete a school meals survey or investigate attitudes towards subjects in school. Children could create a spreadsheet, print off and complete. One group could create a spreadsheet for a different group to use and analyse, considering the way in which information is tabulated effectively or not. Input data and convert into graphical representation adding appropriate labels and axis labels as appropriate.
Select, use and combine a variety software to create a range of content.	Flipcam Video cameras + movie software (iMovie/Moviemaker/	Geography/History	Video Recording and editing focusing on combining a range of clips rather than 'edit in camera.' Children could investigate their local history creating a

	Photostory)		tourist guide. Clips could be gathered from trip work before being sequenced together in an effective manner. Children should be taught to crop down clips where possible so as only the most significant parts are used.

Cycle B			
Objectives	Software/hardware	Suggested link	Guidance
Design, write and de-bug programs that accomplish simple goals.	Probot Kodu http://light-bot.com/hoc.html Flowol iPad – A.L.E.X.		Program the bot to move around a maze or avoid hazards. Move the characters around the space using a simple programme 'Lightbot' Debug the programme by moving or changing commands. Teacher could provide a list of incorrect commands; can the children work out what is wrong and change the commands appropriately? (debugging) Move on to more complex software such as Kodu. Children could design their own game, perhaps in the form of coin collections against an opponent. Use Flowol to produce simple procedures to control devices e.g . flash lights on a fire engine.
Datalogging and analysis and presentation – Simple direct readings	Logit	Science (Sound)	Use 'LogIt' to record sounds around the school. Investigate the loudest/quietest areas etc. Children can plot graphs using pencil and paper or Number box and analyse. Discrete data requires a bar or bar/line graph. Use 'LogIt' to record the suitability of different materials for sound proofing. Difference in light levels around the school. Sun and shadows – combine with temperature sensing to see difference between full sun and shadows.
Combine a range of software on a range of	Logo Garageband	Music Art	This unit is intended as a creative unit in which children use technology purposefully to create patterns, musical

digital devices	Animation software Revelation Natural Art RM Music Explorer	English	accompaniments or image edits. Children could use: Logo to design a repeating pattern, adding colour changes for increased effect. Garageband to put a soundtrack to a short film Create a talking storybook for KS1 Create an advert for a specific product or place. This could forma link with persuasive writing units in English.
Use technology safely respectfully and responsibly.	Online ThinkuKnow, CEOP *www.wikispaces.com ?*	PSHE	This unit is intended to build on what the children have already learnt about internet safety and could be broken down into smaller units that can be developed throughout the year. Possible ideas include: E-Safety discussion work. Revision of safe internet rules and usage within school and at home. Create a wiki page teaching pupils of a similar age how to stay safe on the internet. Create a webpage using MsPublisher, explaining how to keep safe online and what to do in the event of something happening that a child might be uncomfortable with.

Upper Key Stage 2

Cycle A			
Objectives	Software/hardware	Suggested link	Guidance
Design, write and debug programmes	Scratch (access online)		Teach children to add in new sprites, change costumes, add sounds etc. Use Scratch commands to move the sprite and react to an event. Create a game for the existing Sprite. Begin to add variables. Children to add scores and timers.
Select use and combine a range of software and digital devices	Cameras Picasa DTP software	PSHE/English	Children produce a Children's Prospectus for the school to give to prospective pupils. Encourage children to consider target audiences. If designing for a younger child, what implications does this have for the layout you choose, the images you select and the way you write? Teach the children the skills of editing and redrafting a publication for print or online presentation. Edit and crop down photos adding effects where necessary. Compare and evaluate existing leaflets and prospectuses to gather ideas about the ordering of ideas and sections.
Datalogging and analysis and presentation –	Logit or other datalogger	Geography Science DT - monitoring	Setup the datalogger using the computer in order to gather specific data. Upload information after logging has taken place and review as a class. Consider implications pf ICT for precise and accurate details over lengths of time. Display information through software and analyse. Allow children the chance to add and remove aspects of data once logged to answer different questions about a specific environment.
E-Safety – personal information	Online ThinkuKnow, CEOP	PSHE	Ongoing updates to what the children are accessing and reminders about how to stay safe and what to do if they don't feel safe or not happy about something they've accessed online. Possible links can be made throughout the year to Safer Internet Day or Anti-bullying weeks.
Understanding and using technology, be discerning in evaluating digital	Website construction software. *Googlesites,* *PBWorks,*	Thematic/Geog History/Science	Consider formation of existing webpages through analysis. Look at use of colours and introduce the children to the idea of navigability. Evaluate the use of site maps to show layers of webpages. Consider what works well in webpages designed for children of a similar age.

content, use technology securely and safely	*MediaWiki*		Children could then: Build a topic-based website using research and information they have gathered. Create hyperlinks to link both their own pages and pages they have created to other websites. Create multiple pages for different purposes. Insert text and images that they have gathered and/or found online. Children could begin to embed video and sound clips where appropriate to provide additional detail.

Cycle B			
Objectives	Software/hardware	Suggested link	Guidance
Design, write and debug programmes	Flowol Lego Wedo Flowgo Knex	DT – programming, monitoring and control	Devise a procedure to flash the light in the lighthouse. Edit the procedure to include variables to only flash the light at night. Set up the sequences for traffic lights. Differentiate using 2 sets of lights – learn why the sequence of lights is as it is. Talk with the children about the implications of such programming in real life.
Select use and combine a range of software and digital devices	Gimp Photoshop or similar	Art English History Geography.	This unit should focus on: Photo editing – Import a photo (from file or camera), add text, change colours. Consider the way in which the media edit photos and the impact this has on those that view them. Children should be taught how to crop and control images, selecting aspects of images that are most significant and editing out aspects of images that are less necessary. Use edited or gathered images to create book covers or postcards that could be used for later writing topics based on history/ geography/ English work.
Writing for an audience, using technology safely	WordPress/Blogger	English	Set up early in the year ideally. Set up a 'homework blog' or a work blog that parents can access and respond to throughout the day (audience for their writing).

and responsibly			Teach the children about the benefits of online collaboration and instant feedback for writing. Use online blogging as a platform for 'creative writing,' ensuring children see a purpose to the works they create. Blog a residential educational visit allowing children chance to feedback about what they have experienced or achieved, adding photos in where appropriate.
Video recording and editing – Write a TV News Programme.	Videocameras, Bluescreen Media software – movie maker etc	English	Produce and edit a news programme including a weather report, sports report and a range of news articles. Children should use a range of media ideally to film and then sequence video clips. Links could be made to English work providing the children a chance to write scripts based on research or experiences for a real purpose. Where possible, Bluescreen software could be used for children to add images to the background of those presenting.
Collecting, analysing evaluating and presenting data	Survey Monkey Excel.	Maths Science PHSE	Produce an online survey to find out information to support work in other curriculum areas. E.g diet, bath/shower use, toothpaste brands, etc. Producing appropriate (closed) questions. Teach children to use specific functions within data handling software. Use the information gathered to answer questions and hypotheses. Consider how companies use similar information to identify needs for products and customer requirements in retail.

List of websites and software to support other curriculum areas.

This list is by no means exhaustive but has some very useful sites and/or apps.

www.timrylands.com updates a link every day to a new piece of free software, a new app or website. A good place to go!

www.Ifitweremyhome.com – compares countries – Upper KS2

taggalaxy.de – lovely way to search images – populates from Flicker.

www.oranchak.com/againbutslower.com/ - simplifies Wikipedia articles when you input the wiki URL

www.switcheroozoo.com – make animals – Great way to inspire writing for different purposes.

Scratch.mit.edu – Scratch programming online.

360cities.net – panoramic images from different cities around the world.

Garageband (app)

www.looperman.com – requires an free account sign up but lots of royalty-free music loops etc

www.photofunia.com – edit photos and add filters.

www.ambient-mixer.com – make background soundtracks (for stories/animations/films)

cargobot –programming on iPad

This work has been funded through grant funding secured by the North Shropshire Teaching School Alliance
For further information on the contents of these materials, please contact:
Jan Hilditch – Clive CE Primary School
Gareth Pierce – Prees CE Primary School
Michael Hares – Whixall CE Primary School

North Shropshire Teaching School Alliance