Our Lady School Curriculum – Progression grid for the Computing Curriculum

Year 1					
Topic	E safety	National Curriculum objectives	Sticky knowledge	New vocabulary	Skills
Let's Create An introduction to Purple Mash 2Paint	To know to tell a trusted adult if words, images or sounds make them feel uncomfortable or worried. To use technology respectfully To save work in appropriate file names Use safe sites to search for information / books Ask permission before using the internet To use age appropriate books, games and music	**Throughout KS1 the children will cover the following NC objectives:** To understand what algorithms are and how they are implemented as programmes on digital devices. Create and debug simple programmes. Use logical reasoning to predict the behaviour of a simple programme. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Use technology safety and respectfully Keep personal information private Identity where they have concerns about content or contact on the internet.	The children begin to understand what a computer is and how it operates. Compare different computers (for example a tablet, smart phone, games console, desktop and laptop computer). The children can identify the main "parts" (screen, mouse, touchpad, touch screen, keyboard, base unit etc.) The children can discuss input and output. Role-play the parts working together to carry out a task. The children understand that we use many programmable and automated devices at school, home and in the wider world.	*digital hardware and software input word processor graphics logical reasoning algorithm* *Names of hardware: computer visualiser webcam microscope smartphone*	To talk about the choices they have made, revisiting and refining their work in the light of the comments and suggestions from peers. To be able to save, locate and edit work with support. With support log on to a school space/network Explore different input devices Make choices and begin to notice what happens Show work they have done Asks permission before taking someone's photograph Begin to talk about some technology use in everyday life Save and retrieve in prepared folders on network; generally use suitable file names
Visual Information An introduction to data, grouping and sorting, Pictograms				*pictogram, bar chart, line graph, sensor, repetition, branching database, data-logger*	
Discovering Programming An introduction to Beebots, Bluebots and 2Code				*unplugged hardware: visualiser, webcam, microscope, smartphone etc. computer parts: keyboard, monitor, base unit, speakers etc. logical reasoning* *algorithm programmable device program debug, refine, predict repeat (repetition) precision sequence decompose*	

Our Lady School Curriculum – Progression grid for the Computing Curriculum

Year 2					
Topic	E safety	**National Curriculum objectives**	Sticky knowledge	New vocabulary	Skills
Getting Creative Purple Mash 2Animate	All of the Yr 1 objectives as well as: To begin to understand the importance of keeping personal information private and not sharing personal details online Know what to do if something makes them feel worried or uncomfortable Understand that everyone owns the materials they create; begin to ask permission before use Know that anyone can put information on the internet and that it may not be true. Check information they find	**Throughout KS1 the children will cover the following NC objectives:** To understand what algorithms are and how they are implemented as programmes on digital devices. Create and debug simple programmes. Use logical reasoning to predict the behaviour of a simple programme. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Use technology safety and respectfully Keep personal information private Identity where they have concerns about content or contact on the internet.	The children can create or capture digital images that can be used for a sequencing activity. The children can create a simple algorithm to specify the process for a simple animation (which could be an image sequence). The children can use the algorithm to create the simple animation (or sequence of images).	*digital,* *non-digital,* *animation,* *Input and output,* *hardware and software* *debug,* *refine,*	Log on to a school space/network independently. Know work is stored on school network, not individual machines Save and retrieve in prepared folders on network; generally use suitable file names Use a range of information sources (digital and non-digital) for research Use appropriate questions or approaches to find information on specific sites
Starting Research 2 investigate			The children can use appropriate software to write a short description of their animation. The children can use suitable digital resource/s from a restricted range, employing different techniques to find the information. The children can use existing templates or simple software to organise the information they have found. Share with peers or others, explaining how they have organised what they have found.	*digital,* *non-digital,* *website,* *World Wide Web,* *hyperlink,* *hotspot,* *credit,* *bar chart,* *pictogram* *mind map,* *Venn Diagram,* *Carroll Diagram*	Use software to organise and group information and to share ideas Create and debug simple algorithms to achieve specific goals Break a task into smaller steps; write algorithms for the steps Use sequence in algorithms and programs, recognising order is important; begin to use simple repeated sequences Create and debug programs for human robots, onscreen and physical turtles or devices Select the appropriate tool from a limited range to create and amend their work
Messages and Virtual worlds 2Calculate			The children can explain the effects of the choices or decisions they made in the simulation and how these choices affected what happened as the simulation or game progressed. The children can use logical reasoning to predict how the simulation might develop further. The children can send or post an electronic recommendation about the simulation to someone in the school community.	*input* and *output,* *peripheral,* *blog,* *forum* *avatar,* *algorithm,* *simulation,* *logical reasoning,* *pattern,* *predict*	

Our Lady School Curriculum – Progression grid for the Computing Curriculum

Year 3					
Topic	E safety	Topic content	Sticky knowledge	New vocabulary	Skills
Bringing Images to life	All of the KS1 objectives as well as: Recognise unacceptable behaviour and know what to do if they have an Online Safety problem Show a good understanding of school's Online Safety rules especially for copyright ownership and protecting personal data; apply to their work Regularly use technology safely and responsibly Seek consent before using or sharing anyone's resources; understand why this is important Keep personal details safe; do not share these online	Children develop understanding of digital images. They transform and edit images, respecting copyright and ownership. They explore stop animation creating their own versions. They produce programmed animations, using sequence, repeat and selection**.**	The children are able to use appropriate file-name conventions and understandable folder structure to save, organise and retrieve their work. The children understand and apply the rules around copyright and ownership for their own and others' work/digital resources. The children know that some digital resources may not be appropriate. Understand what to do if such materials are accessed. The children can describe the role of the key internal components of a computer and how they interact The children are aware that many online games include chat facilities and use these safely. The children understand we need to seek consent to capture/use sounds. The children can explain how an email system works	*pixels,* brightness, contrast, *tinker, copyright,* component, *computer processor,* saturation, *stop-motion animation, storyboard, algorithm, zoetrope,*	Save/organise work in correct network areas; use appropriate file names/folder structure Select digital tools to create and manipulate images for specific audiences and purposes Use sequence, repetition and selection in algorithms and programs Design, test, debug and refine algorithms for animations; discuss how algorithms helped Continually refine their animation to ensure the animation action is smooth Select and use sound capture and editing tools to produce sound clips for specific audiences/purposes Select and use specific tools from a broad range to organise and present their information In small groups create a database to populate Create graphs to help present their findings
Keeping informed		Children understand the difference between data and information. They use sensors, data-loggers and other tools as part of their investigations. They use branching and flat-file databases to enter, organise and search data, deriving information that they present in different forms.		*data and information data-logger, sensor, selection, branching database, flat-file database record field field content*	
Developing communication		Children use online communication tools such as email and blogs to support collaborative learning, safely and respectfully. They begin to investigate the technology used in digital communication networks. They use simple sound editing software to record and manipulate sound clips.		*Email, server, blog, online discussion forum, common file types and extensions (examples of which are provided in the glossary.)*	

Our Lady School Curriculum – Progression grid for the Computing Curriculum

Our Lady School Curriculum – Progression grid for the Computing Curriculum

Year 4					
Topic	E safety	Topic content	Sticky knowledge	New vocabulary	Skills
Programming and Games MSW Logo Scratch	All of the KS1 objectives as well as: Recognise unacceptable behaviour and know what to do if they have an Online Safety problem Show a good understanding of school's Online Safety rules especially for copyright ownership and protecting personal data; apply to their work Regularly use technology safely and responsibly Seek consent before using or sharing anyone's resources; understand why this is important Keep personal details safe; do not share these online	Children explore simulations, investigating the structure and exploring how they might be programmed. They begin to note that abstraction can simplify them. They decompose tasks, creating and debugging algorithms and understanding how algorithms support the programming process. They write, test, debug and refine programs to achieve specific objectives, using sequence, repetition and procedures. They explore selection in digital systems.	The children can review and evaluate their work, discussing the choices they have made and checking for accuracy. The children use appropriate file-name conventions and understandable folder structure to save, organise and retrieve their work. The children begin to understand selection in relation to sensor inputs in an algorithms or programs The children begin to consider how automated systems work The children will be able to create a word processing document altering the look of the text/images and navigating around the document. The children understand the need for accuracy and efficiency in spreadsheet work. The children know how to organise their work in agreed locations, using appropriate file naming conventions and folder structures.	*simulation, logical reasoning, algorithm, abstraction, selection, program* (noun and verb), *refine, procedure, tinkering*	Analyse simulations beginning to demonstrate understanding of the rules and structures Design, test, debug and refine algorithms and programs to solve problems Build precision and clarity in algorithms, knowing this supports program design Program using various languages/devices Include sequence, repetition and selection in their algorithms and programs Use procedures and functions in their programs to improve efficiency Design, test, debug and refine programs for human robots, onscreen/physical devices Use logical reasoning to predict outcomes in programs and detect errors Create and/or adapt spreadsheet and models including simple functions Create different graphs, exploring options and formats Use data-loggers/sensors in investigations, using results to support hypotheses Using MS Word to create a document and change its effect using various tools Able to open previous saved work, edit it and resave the work Able to crop, rotate and resize an object or text box Use speel check and grammar check Discover the find and replace tool
Word Processing		Children will be able to create a word processing document altering the look of the text and navigating around the document. They will know how to add images to a word document. The children will learn the correct way to search for images that they are permitted to reuse. They can use a table in Word as well as use bullet points and numbering. The children can add text boxes and shapes		Font, Format, Table Tools *(Design, layout)* Font, Text box/Text Effect *(Word Art)* Image, Align, Wrap Text, Hyperlinks, Operating Systems, Copyright	
Authoring Introduction to spreadsheets Purple Mash 2Calculate		The children are introduced to spreadsheets. They use formatting to vary the format of cells and create tools for specific user needs. They create models, identifying variables and using *what-if* modelling**.**		*Spreadsheet*, cells, columns and rows, cell reference *spreadsheet)* *formula*, (*spreadsheet)* *function* *Selection (in programming)* *Variables (in spreadsheets)*	

Our Lady School Curriculum – Progression grid for the Computing Curriculum

Year 5					
Topic	E safety	Topic content	Sticky knowledge	New vocabulary	Skills
Robotics and Systems Animation using Scratch	All of LKS2 objectives, as well as: Understand and apply the school's Online Safety rules, consistently especially those for copyright and personal data Recognise acceptable and unacceptable behaviour on- and off-line Identify a range of ways to report concerns about content and contact on the internet Explain the reasons for age restrictions and the result if we do not obey Ensure their contributions online are high quality accurate unbiased, relevant Organise/adjust language and style for context, audience and technology used Always promote and demonstrate good behaviour when using technology on- and off-line	They create, test, debug and refine algorithms, pseudocode and the related programs using sequence, selection, repetition and variables. They program physical devices, controlling inputs and outputs, relating to their study of automated systems.	The children can organise their work confidently in agreed locations, using appropriate file-naming conventions and folder structures. The children can save drafts of their work and use these to support critical review in which they evaluate and improve their work. The children can demonstrate understanding of the rules around copyright, ownership and plagiarism and to apply these across their computing work. Know key functions of an operating system Use graphical tools in 3D modelling software to create models, developing the detail, texture and surface material. Know a range of sound file types and how each may be used Confidently import/export sound recordings between applications using suitable format	decomposition, algorithm, variable (in programming), constant, abstraction, pseudocode, program (noun and verb), procedure, sensor, input, output	Review the need for efficient program design. To use a programme to control a computer screen display. Write programs that control pen width/colour and coordinate this with the screen background. Use sequence, selection, repetition and variables in programming an onscreen game or activity. Program a physical device using Scratch. Organise their work confidently in agreed locations, using appropriate file-naming conventions and folder structures.
3D models Sketch up Make		Children use 3D graphical modelling to create and explore objects. They understand that digital graphical tools can support the creation of models, enabling them to be explored and developed in 3D		Pan, Orbit, Zoom, Push/Pull, Offset, Scale, Transition, Dimensions, Intersect, Wire frame	Review their models with others, moving round them in 3D Use feedback when refining their models. Evaluate the effectiveness of their work; explain how they could develop it further to meet audience need Describe how keeping and reviewing drafts is key to building their critical awareness
Sound works Audacity		Children review how digital sound is used in the world and how it has developed over time. They create multi-track sound recordings for specific audiences, incorporating different content and demonstrating their understanding of the rules for copyright. They use programming languages to create their own sound clips.		*dynamics, pitch, tempo, timbre, looping (sounds)* *multi-track, podcast, plagiarism, common file types, copyright*	Use a range of digital tools and techniques to plan, structure, refine and present sound recordings for specific audiences Evaluate the effectiveness of their sound work; explain how they could adapt pieces for several different audiences

Our Lady School Curriculum – Progression grid for the Computing Curriculum

Our Lady School Curriculum – Progression grid for the Computing Curriculum

Year 6					
Topic	E safety	Topic content	Sticky knowledge	New vocabulary	Skills
Staying connected	All of LKS2 objectives, as well as: Understand and apply the school's Online Safety rules, consistently especially those for copyright and personal data Recognise acceptable and unacceptable behaviour on- and off-line Identify a range of ways to report concerns about content and contact on the internet Explain the reasons for age restrictions and the result if we do not obey Ensure their contributions online are high quality accurate unbiased, relevant Organise/adjust language and style for context, audience and technology used	Children develop safe and appropriate use of online technologies, considering what they can use and what information is shared about them. They create blogs for school projects, checking and uploading digital content. They understand how a wiki works and the benefits of collaborative working. They know the school's Online Safety rules and are proactive in encouraging other children to keep safe online.	The children know what 'personal information' is and why we should be protective of this information when online. The children know that most modern communication devices can provide details of our location. The children understand the need for accuracy and efficiency in spreadsheet work. Save drafts. Use to improve their work. The children can organise their work confidently in agreed locations, using appropriate file-naming conventions and folder structures. The children understand that tools can be designed using spreadsheet software to support different users' needs. The children understand that using graphs within spreadsheets can support prediction and 'what if 'questions.	*wiki,* *blog,* *micro-blog,* *data protection,* *intellectual property,* *copyright,* *GPS,* *creative commons,* *common file types*	Critically evaluate how online tools promote safe, respectful responsible use Organise/adjust language and style for context, audience and technology used Critically evaluate effectiveness of their work; identify and implement refinements Analyse audience impact of specific animations and films Use appropriate tools to plan, structure, refine and present a film or animation for specific audiences Evaluate the effectiveness of their work; explain how they could develop it further to meet audience need Describe how keeping and reviewing drafts is key to building their critical awareness Discuss their knowledge and experience of using technology to work with film Use a range of digital tools and techniques to plan, structure, refine and present sound recordings for specific audiences Evaluate the effectiveness of their sound work; explain how they could adapt pieces for several different audiences
Information models Excel		Children develop expertise in spreadsheets, using both formulae and functions. They import and analyse data collected on data-loggers. They use conditional formatting to vary the format of cells and create tools for specific user needs. They create models, identifying variables and using *what-if* modelling.		*Spreadsheet*, cells, columns and rows, cell reference *spreadsheet) formula, (spreadsheet) function Selection (in programming) Variables (in spreadsheets)*	

Our Lady School Curriculum – Progression grid for the Computing Curriculum

Morphing Images Pivot Stick Animator Moviemaker Sketchup Make	Always promote and demonstrate good behaviour when using technology on- and off-line To understand and use security settings and features in online environments to protect privacy and safety. To understand some of the methods they can use to report concerns about content and contact.	The children use 3D graphical modelling to create and explore objects. They review operating systems. They evaluate films and animations, going on to create live film or animations for specific audiences. They demonstrate their understanding of copyright and ownership.		*storyboard, (video) transition, (video) trimming, operating system, Graphical user Interface, (GUI, pronounced 'gooey') Windows, DOS (Disk Operating System) common file types, copyright, plagiarism*	
	Throughout Key stage 2 Pupils should be taught to: -design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts -use sequence, selection, and repetition in programs; work with variables and various forms of input and output -use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs -understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content -select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information -use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.				

Our Lady School Curriculum – Progression grid for the Computing Curriculum