Subject Policy:

Computing

Updated: September 2020

Next Update: September 2021

Intent – *What is Woodlane aiming to achieve through its Computing curriculum?*

- To develop computational thinking and creativity in the use of new or unfamiliar technologies.
- To develop analytical skills in problem solving using computational terms
- To engage in the practical experience of writing computer programs in order to solve problems.
- To understand and apply the fundamental principles and concepts of computing, including abstraction, logic, algorithms and data representation
- To become responsible, competent, confident and creative users of information and communication technology.
- To become digitally literate with the ability to express and develop ideas through, information and communication technology
- To become active participants in a digital world.
- To develop personal learning and thinking skills to enable pupils to enter further education / work and adult life as confident and capable individuals.
- To understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy
- Be able to recognise inappropriate content, contact and conduct and know how to report concerns.
- To ensure all pupils leave Woodlane with a computing / IT related qualification which reflects the best of their ability.

Implementation – *How is the Woodlane Computing curriculum delivered?*

Curriculum Delivery

- Pupils have full access to the Computing National Curriculum which is differentiated to meet pupils' learning needs and styles.
- The Computing curriculum is designed to be challenging, appropriate to each pupil's stage of development.
- The Computing Curriculum offers opportunities for cross-curricula learning, to ensure pupils make significant personal development, including:

    ✓ E-safety theme day;
    ✓ creating computer games theme day;
    ✓ BBC Young Reporter;
    ✓ cross curriculum technology based projects;
    ✓ SaLT strategies/Word Aware integrated in to teaching;
    ✓ communication development through the use of a wide range of media products including online resources;

- ✓ exploring the world of work through business document creation and application;
- ✓ leadership skills through iPad training for all pupils including specialist digital leaders per cohort;
- ✓ pupil led training in the use of iPads for accessibility tools;
- ✓ targeted iPad apps training;
- ✓ creating and editing short films using iPads (iMovie);
- ✓ creating music tracks using iPads (GarageBand);
- ✓ learning to use a range of adobe creative cloud applications;
- ✓ lunch time computing club;
- ✓ computer hardware workshops;
- ✓ life skills explored through a range of topics including home management, expressive arts, world of work, health & survival;
- ✓ opportunities for cross curricular activities for example gardening, creating film props and arts & crafts workshops.

- The KS3 Computing curriculum is taught through 1.94 hours (average) contact time per week, (8% curriculum time).
- The KS4 Computing curriculum is taught through 2.3 hours (average) contact time per week, (9% curriculum time).
- In KS4, pupils who opt to study ASDAN are taught through 2.08 hours (average) contact time per week, (8% curriculum time).
- The Computing curriculum is designed to build and expand on previous skills and subject knowledge, over a 5 year period. It also plans for opportunities for repetition to embed knowledge, increasing the chance of information recall and to integrate new knowledge into larger ideas (view our Computing curriculum map here).
- We offer a wide range of qualifications in Computing, which are selected to appropriately challenge, based on each pupil's stage of development, including:
    - ✓ BTEC tech Award in Creative Media Production;
    - ✓ Functional Skills ICT;
    - ✓ OCR Entry level Computing;
    - ✓ Personal Development Programmes (ASDAN).
- It is important for pupils to become agile users of technology, we develop this through curriculum topics, use of adobe creative cloud applications, specific iPad training and the use of apps, video equipment and computer hardware workshops.
- Train pupils in the safe / responsible use of technology and social media platforms.
- We provide additional extra-curricular activities before school, after school and at lunch time, including:
    - ✓ qualification support sessions;
    - ✓ computer club;
    - ✓ coding club
    - ✓ opportunities for homework support;
    - ✓ one to one support.

Teaching and Learning

- Our pupils are taught by transition teachers in Year 7 and subject specialists from Year 8 to Year 11.
- Our Computing Subject Leader is well qualified, possessing a PGCE in ICT, a BSc hons in ICT in Education, is a qualified IT trainer and holds QTLS.
- The Computing curriculum is differentiated broadly into 3 levels of challenge, 'all', 'most' and 'some'. Further differentiation and personalisation is implemented when required.
- Computing homework is provided on a standardised format and is differentiated to provide the appropriate level of challenge.
- In Computing we have a 3 tiered approach to supporting a pupil's learning, including:

  <u>Universal</u> – this is the teaching your child will receive from the Computing subject teachers and will include adaptations to match learning needs. All classes:

  - ✓ are supported by a teaching assistant (TA);
  - ✓ have a maximum of 10 pupils per class to ensure there is a high level of support available from the teacher and TA;
  - ✓ are multi-sensory;
  - ✓ are dyslexia friendly;
  - ✓ integrate speech, language and communication support;
  - ✓ are supported either directly or indirectly by speech and language therapists;
  - ✓ receive e-safety training, and
  - ✓ iPad training on how to use apps safely to enhance and support their learning.

  <u>Targeted</u> – it may be appropriate to consider making additional short term special educational provision to remove or reduce any obstacles to your child's learning. This takes the form of a graduated four part approach of a) **assessing** your child's needs, b) **planning** the most effective and appropriate intervention, c) **providing** this intervention and d) **reviewing** the impact on your child's progress towards individual learning outcomes.

  Interventions may include:

  - ✓ targeted support for individual pupils in the use of technology;
  - ✓ one to one support from specialist computing TA;
  - ✓ small group sessions in conjunction with a SpLD specialist;
  - ✓ small group iPad training sessions;
  - ✓ support session for coursework / homework
  - ✓ promote leadership skills for pupils with a high aptitude for computing
  - ✓ promote self-management to better cope with classroom environment
  - ✓ promote personal learning and thinking skills to develop independence using technology
  - ✓ targeted revision guides
  - ✓ parent workshop on E-safety

Specialist – it may be necessary to seek specialist advice and regular long term support from a specialist professional in order to plan for the best possible learning outcomes for your child.

Assessment

- Pupils collate Pupil Achievement Books, where they showcase their best work and progress over time in Computing.
- Our bespoke Flight Path is used to track the progress of pupils in Computing and determine expected outcomes from different starting points.
- Computing teachers use a range of formative and summative assessment procedures to assess progress and attainment, including:
    - ✓ daily marking (click here for teaching and learning policy);
    - ✓ self/peer assessment;
    - ✓ completing practise exam questions;
    - ✓ targeted questioning;
    - ✓ setting homework to consolidate classwork;
    - ✓ pupil led curriculum specific quiz creation / implementation;
    - ✓ completing challenges on 'hour of code' (web resource);
    - ✓ practical tasks through workshops (building computers);
    - ✓ using iPads to evidence work;
    - ✓ informal/formal examinations;
    - ✓ B-Squared assessments;
    - ✓ Informal/formal coursework feedback.

Impact *– What difference is the Computing curriculum making on pupils?*
- The vast majority of pupils meet or exceed their expected progress in Computing.
- The very large majority of pupils meet or exceed their expected outcomes in Computing (external qualifications).
- The vast majority of pupils leave Woodlane with at least one formally recognised computing qualification. Many pupils join mainstream colleges/sixth forms at post-16 where they study a range of different qualifications and subjects following excellent progress from their starting points in Computing and successful completion of (all or either) OCR Entry Level Computer Science, Functional Skills ICT L1/L2, or BTEC tech Award in Creative Media Production L1/L2
- Pupils are well-prepared for the next stage of their education.
- Analysis of Computing outcomes and pupil progress indicates that there is little statistical significance between key groups. Where any small differences are identified strategies are implemented swiftly.
- Computing curriculum is embedded into most subjects through the use of desktop computers in most classrooms and iPads
- Personal Development Programme (ASDAN) is delivered cross curricular and personalised for individual pupils. Pupils develop an understanding of the wider world around them and how they can make a positive impact.

- Woodlane pupils become IT literate, with transferable skills they take with them into further education and the world of work.
- Functional skills and life-skills are embedded in the Computing curriculum and are personalised for each pupil.
- Through the delivery of practical workshops pupils develop self-confidence and leadership skills which has a positive impact on pupil's self-esteem and self-awareness.

* Please see annual SEF/SIP for further details.

Appendix

Computing Curriculum Map – *What will the pupils learn and when?*

Year 7	Autumn A	Autumn B	Spring C	Spring D	Summer E and Summer F
Content	Introduction to Computing E-Safety	Hardware and Software	Introduction to programming and coding Visual coding tools and programming languages		BBC Micro:bit Robotics

Skills		Autumn A	Autumn B	Spring C and Spring D	Summer E and Summer F
	All	-Can name at least 3 key Internet Safety tips -Can demonstrate one way to keep themselves safe when playing games/interacting with others online -Shows an awareness of cyber bullying -With support, can use their username and password to log on to the school network -Understands that their password is private -With support, can find their own documents and basic programmes -With support can access the school shared drives	-Can point to and name various parts of a computer -Can interact with software using the keyboard and the mouse -Can explain what hardware is -Can explain what software is -Can use a mouse to select items on a screen -Can use right click on a mouse to cut and copy -Can select software located on the desktop -Can store/save items correctly on a computer -Shows an awareness of the different hardware and software in use around school	-Can follow instructions step by step to achieve a set task away from the computer -Understands that computers need instructions -Understands that instructions must be in a language the computer understands and must be in the correct order -Can connect blocks together to give simple instructions to a robot -Can produce simple scripts in Scratch that make objects move around the screen -Can use basic functional coding that achieves a set goal using Hour of --Code activities, i.e. A robot turning on a light -Can use the internet to search for and select appropriate images -With support, can produce a simple program to meet some aspects of a design brief, i.e. Animate a page of your favourite images -Can use simple conditional statements to control objects -Can use basic loops to repeat common tasks in their programming many times over		-Understands what the Micro:bit is -Can name 3 basic pieces of hardware included on the Micro:bit -Explains the importance of keeping the Micro:bit safe -Can use simple visual block coding to produce basic code -With support, can develop programmes for the Micro:bit with a functional purpose, including; Developing a Digital Dice, Creating a -Digital Thermometer and Making a Digital Compass -With support, can develop programmes for the Micro:bit with a fun purpose, including; Creating Handheld Games Console and Creating Personal Alarm Systems -With support can plug in a USB cable and transfer code from the computer to a Micro:bit -With support, helps to design a project which uses the Micro:bit for an everyday function -With support, describes the purpose of their project -Shows team working skills as part of a group, taking on one role successfully
	Most	-Can explain the importance of staying safe online -Can demonstrate multiple ways to stay safe online -With limited support/prompts can log on to school systems. -Can repeat stories fictional or real of young people who were not safe online -Can name one social network -Can explain the effects and consequences of cyber bullying	-Knows that some hardware is connected by wires -Knows that some items are connected wirelessly -Can describe the difference between hardware and software -Can select the appropriate software or hardware for a particular task -Can use keyboard functions to perform different tasks	-Can use their own ideas to design and animate basic sprites Shows an awareness of how to debug their own code before asking for support -Writes a program that meets most aspects of a design brief they are given, i.e. Animate your favourite images using sound, movement and colour -Can test their code/game for basic errors -Can answer questions about their of code and their impact on the game -Can represent computer coding as a written algorithm -Can design code for use with specific tasks within a game, i.e. to make a chicken move around the screen		-Can use a mixture of simple visual block coding and Python to produce basic code for the Micro:Bit -Can describe different uses for robots in our everyday life -With support, designs a project that uses a Micro:bit for an everyday function -Shows some team work and leadership skills as part of a group -Describes the purpose of their project and the materials/ support needed to achieve it -Is able to take on different roles, including; coder, designer and hardware engineer
	Some	-Can demonstrate a deeper understanding of the consequences of internet safety	-Can successfully unplug/plug in various elements of computer hardware	-Uses loops effectively to complete multiple repetitive tasks within their coding -Uses conditional coding, including IF/When statements to create actions within their programme -Can use algorithms to represent various everyday tasks,		-Can successfully use Python to produce more advanced code for the Micro:Bit -Describes the positive and negative impact robots have on our daily lives

		-Able to make links between social media/networking and the risks it poses. -Independently accesses all school data	-Can describe using key words different parts of a computer and their function -Can describe whether hardware is input/output/both -Can describe how storage works	-Can troubleshoot/debug their own code independently -Writes a programme that meets all aspects of a design brief -Tests and evaluates the effectiveness of the code written -Can explain the similarities between visual block coding and the language this represents; i.e. Hour of Code and JavaScript	-Can troubleshoot/debug their own code independently and offers support for others -Leads on the design and creation of a project that uses the Micro:bit for an everyday task, showing leadership skills -Describes the purpose of their project and evaluates its effectiveness

Year 8		Autumn A	Autumn B	Spring C	Spring D	Summer E	Summer F
Content		Basic edits / Digital imaging	Using Photoshop	BBC School Report	BBC School Report	Learning text based programming language (Python)	Learning text based programming language (Python)
Skills	**All**	-What is a digital image? -Know the difference between Bitmap & Vector -What is Pixel Depth? -Understand the effects of resolution on an image -Use paint to edit an image	-Understand Pixel Depth -Know how to combine layers and remove backgrounds to create new images -Know how to combine the dodge and burn tools along with spot removal in Photoshop -Use online images -Create an image in Photoshop	-identify purpose and audience in a given source -identify the difference between open and closed questioning -differentiate between fact and opinion -Plan for equipment needed -Use video hardware and software to capture sequences	-Examine the typical structure of a news report -Identify features of writing reports for TV, radio and online platforms -Identify video editing software to use for file format -Edit sequences -Arrange audio	-Know what Python is -Know how to open the script editor -Identify some of the applications Python is used for	-What is a variable? -What is a condition? -What is a while loop?
	Most	-Understand how a digital image is made up -Understand how a computer displays coloured images using binary and RGB values -Know what is the pixel depth of "Truecolour" -Merge images together using paint	--Effectively combine layers and remove backgrounds to create new images -Effectively combine the dodge and burn tools along with spot removal in Photoshop -Know how to responsibly use online pictures -Able to merge online pictures together using the clone tool in Photoshop	-Use the skills of analysis, comparison and evaluation for a given source -Evaluate the effect of different questioning techniques -Analyse the effect of language -Identify input devices and associated software to use -Store and retrieve sequences	-Analyse the typical structure of a news report -Plan and produce storyboards and reports for different news platforms -Edit sequences to meet needs -Ensure audio meets needs -Identify appropriate playback software to use for news story -Identify the display device to use for the sequence -Identify copyright constraints on using other's information	-Write, save and run a program in script mode -Use the Python interactive mode as a calculator	-Apply and use a variable -Apply and use a condition -Apply and use a while loop
	Some	-Explain how a computer displays coloured images using binary and RGB values -Explain the process, in your own words, of how a computer takes an image and displays it on the screen	-Know how to put together a questionnaire to collect suitable feedback for a portfolio of images -Understand how to effectively collate a selection of images into a suitable portfolio -Know how to combine own ideas with peer feedback to produce a detailed evaluation	-Evaluate the TAP of a source (Text, Audience, Purpose) -Promote effective interviewing techniques in your own work -Judge between implicit and explicit meaning -Use input devices and built in video software to record information that meets needs -Use audio input devices and software to record audio that meets needs -Identify file format used by the input devices	-Write for different purposes while adapting and editing language to suit the given audience -Analyse and evaluate own and peers work -Select and use appropriate combination of software and display device to playback news stories -Adjust playback and display settings so that sequences are presented to meet needs -Combine information from different forms or sources in line with any copyright constraints	-Explain what Python is used for -Explain the importance of using correct data types: string, integer or float -Writing instructions on how to create edit and save a line of code	-Write algorithms in pseudocode -Describe the difference between syntax errors, run-time errors and logic errors -Learn techniques for debugging programs

Year 9		Autumn A	Autumn B	Spring C	Spring D	Summer E	Summer F
Content		Trends in computing	Programming Project	Testing and Evaluation	Hardware	Software	Logic
Skills	**All**	-Identify a development in computing -Identify a few different examples of the use of technology -Identify some of the technical terms used in their development -Identify a social, ethical or legal effect of the development	-Identify what their program will do -Output to screen -Store data in variables -Select using IF -Use iteration -Use an arithmetic operator -Use comments -Attempt to make the program specified in the task	-Run their program -Comment on whether their program works -Comment on what they would do differently next time	-Know the difference between hardware and software -Identify different peripherals of a computer system e.g. input, output and storage devices -Identify common internal components of a computer -Know the difference between RAM and ROM and what ROM is used for	-What is an operating system -What are the functions of an operating System -Know the difference between application software and system software -Identify the different security and system maintenance software	-Convert binary numbers to denary -Convert denary numbers to binary -State the output of different logic gates AND, OR and NOT -Sequence instructions into a logical order
	Most	-Describe a development in computing, including some descriptive detail of the development -Describe a range of different examples of the use of technology -Identify and describe a range of technical terms used in their development -Identify two social ethical or legal effects of the development	-Outline how their program will work -Output to screen -Store data in variables -Select using IF -Use iteration -Use an arithmetic operator -Use comments -Make a program that has some of the functionality described in the task.	-Test their program entering different values. -Comment on whether their program works -Describe how they overcame a problem in making it -Describe any bugs that exist in the program -Describe any future improvements that could be made	-Understand the functions of common peripherals -Understand internal components of a computer and their function -Suggest appropriate input and output devices for a given scenario -Understand the difference between main memory and permanent storage devices	-State why an operating system is needed, including its functions. -State the purpose of different application software -State the purpose of different system utilities -State the purpose of different security and system maintenance software	-Convert between binary and denary numbers from 0 to 15 -Understand the difference between information and data -Know the functions of logic gates -Know sequencing of instructions
	Some	-Describe a development in computing, and how it was developed. (How = who, why, where, what, when) -Describe a range of different examples of the use of technology, and comment on their impact -Describe and appropriately use the technical terms used in the development of the technology. -Identify and describe two social, ethical or legal effects of the development	-Plan how their program will work -Independently and accurately demonstrate a range of the Techniques -Output to screen -Store data in variables -Select using IF -Use iteration -Use an arithmetic operator -Use comments -Make a working program which includes all functionality as described in the task	-Test their program entering several different values and use information from this to comment on how well their program works. -Describe how they overcame a problem in making it -Describe any bugs that exist in the program -Describe any future improvements that could be made	-Able to draw a block diagram of the main components of a computer system: input, processor, output and storage -Explain what main memory is used for -Understand what happens at the "Process" stage	-Describe the differences between application software and system software in different context -Describe what utility software are used for in different context -Describe the purpose of different security and system maintenance software in different context	-Convert between large binary and denary numbers fluently -Describe the functions of logic gates -Describe sequencing of instructions

Year 10	Autumn A	Autumn B	Spring C	Spring D	Summer E	Summer F
Content	Use techniques to search for, store and share information		Be able to select and use software to handle data & Be able to use software tools to format information		Be able to select and use software to handle data & Be able to use software tools to format information	

Skills	**All**	-Produce a basic system to store electronic files, in which; some folders have meaningful names, some files are saved in an appropriate file type with meaningful names, and some files are stored logically within the folder structure -Demonstrates a limited understanding of the most common tools and features of email software -Enters basic search criteria into a search engine to find appropriate information which partly meets the specified requirements, and records limited information on the Copyright holder(s) of the information found	-Creates a spreadsheet importing data with some accuracy which meets some of the specified requirements. -Edits and manipulates data with some accuracy and provides some relevant information to meet particular purposes. -The choice of data-handling software used is of limited appropriateness to the audience and purpose -Makes basic use of formatting tools, there may be limited consistency in their use. -The basic application of formatting tools has limited impact on the overall appearance of the document and ease with which information can be read -Requires support to enhance the appearance of the output	-Creates a database importing data with some accuracy which meets some of the specified requirements -Edits and manipulates data with some accuracy and provides some relevant information to meet particular purposes. -The choice of data-handling software used is of limited appropriateness to the audience and purpose -Makes basic use of formatting tools, there may be limited consistency in their use -The basic application of formatting tools has limited impact on the overall appearance of the document and ease with which information can be read -Requires support to enhance the appearance of the output
	Most	Produces a sound system to store electronic information, in which; most folders have meaningful names, most files are saved in an appropriate file type with meaningful names and most files are stored logically within the folder structure -Demonstrates a sound understanding of the most common tools and features of email and some understanding of the more advanced features of email software -Enters sound search criteria into a search engine to find appropriate information which largely meets the specified requirements, and records the Copyright holder(s) of the information found with some accuracy but not all the required details	-Creates a spreadsheet importing data mostly accurately which meets most of the specified requirements. -Edits and manipulates data mostly accurately and provides mostly relevant information to meet particular purposes -The choice of data-handling software used is of sound appropriateness to the audience and purpose -Makes sound use of formatting tools and in most cases applies them consistently -The sound application of formatting tools results in some enhancement of the overall appearance of the document and improves the ease with which information can be read -Works with only occasional support to enhance the appearance of the output	-Creates a database importing data mostly accurately which meets most of the specified requirements -Edits and manipulates data mostly accurately and provides mostly relevant information to meet particular purposes -The choice of data-handling software used is of sound appropriateness to the audience and purpose. -Makes sound use of formatting tools and in most cases applies them consistently -The sound application of formatting tools results in some enhancement of the overall appearance of the document and improves the ease with which information can be read -Works with only occasional support to enhance the appearance of the output
	Some	-Produces a well-structured, logical system to store electronic information, in which; all folders have meaningful names, all files are saved in an appropriate file type with meaningful names and, where appropriate, versions of file(s) are clearly identified and all files are stored logically within the folder structure -Demonstrates a thorough understanding of the common and advanced tools and features of email software -Enters effective search criteria into a search engine to find appropriate information, which fully meets the specified requirements, and records the Copyright holder(s) of the information found accurately and thoroughly	-Creates a spreadsheet importing data with complete accuracy which fully meets the specified requirements. -Edits and manipulates data with complete accuracy and provides wholly relevant information to meet particular purposes -The choice of data-handling software used is of wholly appropriate to the audience and purpose -Makes effective use of formatting tools and applies them consistently -The application of formatting tools thoroughly enhances the overall appearance of the document and means the information is consistently clear and easy to read -Works independently to enhance the appearance of the output	-Creates a database importing data with complete accuracy which fully meets the specified requirements -Edits and manipulates data with complete accuracy and provides wholly relevant information to meet particular purposes. -The choice of data-handling software used is of wholly appropriate to the audience and purpose -Makes effective use of formatting tools and applies them consistently -The application of formatting tools thoroughly enhances the overall appearance of the document and means the information is consistently clear and easy to read -Works independently to enhance the appearance of the output

Year 11	Autumn A	Autumn B	Spring C	Spring D	Summer E	Summer F
Content	Be able to select and use software to communicate information for a business purpose		Understanding Computer systems		Understanding Computer systems / ICT functional skills	
Skills **All**	-Creates a limited range of file types, sometimes selecting the appropriate medium for the type of communication -Uses some tools and facilities in each type of software with limited effectiveness to meet some of the specified requirements -Includes content, some of which meets the specified requirements and has limited suitability for the target audience -Errors may be intrusive and likely to impact significantly on the meaning of the content		-Know how ICT can be used to meet business needs -Identify how ICT can be used to support business working practices -Identify legal, ethical, safety and security issues affect how computers should be used		-Exam Prep -Revision notes -Mock papers	
Most	-Creates a range of file types, mostly selecting the appropriate medium for the type of communication -Uses the tools and facilities in each type of software with sound effectiveness to meet most of the specified requirements -Includes content, most of which meets the specified requirements and is mostly suitable for the target audience -Occasional errors will not affect the overall meaning		-Understand how to work with information and data to meet specified business needs -Know how ICT can be used to support business working practices in different contexts -Explain how legal, ethical, safety and security issues affect how computers should be used in different contexts		-Exam Prep -Revision notes -Mock papers	
Some	-Creates a range of file types, in each case selecting the appropriate medium for the type of communication -Uses the tools and facilities in each type of software effectively to meet all of the specified requirements -Includes content that fully meets the specified requirements and is wholly suitable for the target audience -Few, if any, errors in spelling, punctuation and grammar		Apply knowledge and understanding (to a given case study); -Describe how ICT can be used to meet the specific business needs of the case study -Describe how ICT can be used to support the unique business working practices of the case study -State how legal, ethical, safety and security issues affect how computers are used in the case study		-Exam Prep -Revision notes -Mock papers	