Astrea Academy Trust

Greengate Lane Academy

Computing Policy

Name of school	Greengate Lane Academy
Date of policy	September 2023
Member of staff responsible	Joseph Fogg
Link Governor	Simon Merrywest (Curriculum)
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Introduction

Computing sits within our school curriculum as a foundation subject and forms part of a broad and balanced curriculum.

Computing is taught in our school because:

"Digital technology is driving extraordinary global changes that some are calling the Fourth Industrial Revolution. Navigating these changes effectively and safely requires a significant understanding of digital literacy, information technology and computer science."

"Learners' success in future engagement with computing will depend on how well introductory curricula prepare them in both the cognitive and affective dimensions of computational learning." ***(Research review series: computing, 2022****).*

This fits with our school ethos that high quality computing education equips children with the skills to explore, experiment, create and invent their own work using a range of multimedia whilst engaging, inspiring and challenging pupils. It provides children with opportunities to develop and extend skills to express their individual interests and ideas, whilst also contributing to the development of the child emotionally, aesthetically, spiritually, intellectually and socially. At Greengate Lane children are encouraged to explore with confidence and strive for excellence through effort, practise and perseverance.

Greengate Lane Academy is an academy school. We deliver computing through the National Centre for Computing Scheme of Learning for computing.

This computing policy is informed by current national guidance:

- Computing Programmes of study: Key Stages 1 and 2 2013 gov.uk (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/239033/PRIMARY_national_curriculum_-_Computing.pdf)
- Research review series: Computing (https://www.gov.uk/government/publications/research-review-series-computing/research-review-series-computing)

<u>The aims of Computing, using the National Centre of Computing Education Scheme of Work</u>

The National Centre of Computing Education meets the requirements of the national curriculum and the aims and targets outlined in the government 'Computing Programmes of study: Key Stage 1 and 2' document listed above.

By following National Centre of Computing Education at Greengate Lane Academy we intend that computing will: -

- **Can understand and apply** the fundamental principles and concepts of computer science, including abstraction, logic, algorithms, and data representation

- **Can analyse problems in computational terms**, and have repeated practical experience of writing computer programs in order to solve such problems

- **Can evaluate and apply information technology**, including new or unfamiliar technologies, analytically to solve problems

- **Are responsible, competent, confident, and creative** users of information and communication technology.

Computing Content

There are six strands of computing that underpin the curriculum. The curriculum builds on the children's knowledge and skills in each of the six stands over their time at Greengate Lane Academy. The six strands include understanding computing systems and networks, creating media, programming and data and information.

Year 1:

Theme	Concepts studied:
Computing systems and networks – Technology around us	• To identify technology, a computer and its main parts, a mouse in different ways. • To use a keyboard to type on a computer and to edit text. • To create rules for using technology responsibly
Creating Media – Digital painting	• To describe what different freehand tools do • To use the shape tool and the line tools • To make careful choices when painting a digital picture • To explain why I chose the tools I used • To use a computer on my own to paint a picture • To compare painting a picture on a computer and on paper
Programming A – Moving a robot	• To explain what a given command will do • To act out a given word • To combine 'forwards' and 'backwards' • commands to make a sequence • To combine four direction commands to make sequences. • To plan a simple program • To find more than one solution to a problem
Data and information – Grouping data	• To label objects • To identify that objects can be counted • To describe objects in different ways • To count objects with the same properties • To compare groups of objects • To answer questions about groups of objects
Creating media – Digital writing	• To use a computer to write • To add and remove text on a computer • To identify that the look of text can be changed on a computer • To make careful choices when changing text • To explain why I used the tools that I chose • To compare typing on a computer to writing on paper
Programming B - Programming animations	• To choose a command for a given purpose • To show that a series of commands can be joined together • To identify the effect of changing a value • To explain that each sprite has its own instructions • To design the parts of a project • To use my algorithm to create a program

Year 2:

Theme	Concepts studied
Computing systems and networks –IT around us	• To recognise the uses and features of information technology • To identify the uses of information technology in the school • To identify information technology beyond school • To explain how information technology helps us • To explain how to use information technology safely • To recognise that choices are made when using information technology
Creating Media – Digital photography	• To use a digital device to take a photograph • To make choices when taking a photograph • To describe what makes a good photograph • To decide how photographs can be improved • To use tools to change an image • To recognise that photos can be changed
Programming a – Robot algorithms	• To describe a series of instructions as a sequence • To explain what happens when we change the order of instructions • To use logical reasoning to predict the outcome of a program • To explain that programming projects can have code and artwork • To design an algorithm • To create and debug a program that I have written
Data and information – Pictograms	• To recognise that we can count and compare objects using tally charts • To recognise that objects can be represented as pictures • To create a pictogram • To select objects by attribute and make comparisons • To recognise that people can be described by attributes • To explain that we can present information using a computer
Creating media – Digital music	• To say how music can make us feel • To identify that there are patterns in music • To experiment with sound using a computer • To use a computer to create a musical pattern • To create music for a purpose • To review and refine our computer work
Programming B – Programming quizzes	• To explain that a sequence of commands has a start • To explain that a sequence of commands has an outcome • To create a program using a given design • To change a given design • To create a program using my own design • To decide how my project can be improved

Year 3:

Theme	Concepts Studied
Computing systems and networks – Connecting computers	• To explain how digital devices function • To identify input and output devices • To recognise how digital devices can change the way that we work • To explain how a computer network can be used to share information • To explore how digital devices can be connected • To recognise the physical components of a network
Creating media – Stop-frame animation	• To explain that animation is a sequence of drawings or photographs • To relate animated movement with a sequence of images • To plan an animation • To identify the need to work consistently and carefully • To review and improve an animation • To evaluate the impact of adding other media to an animation
Programming A – Sequencing sounds	• To explore a new programming environment • To identify that commands have an outcome • To explain that a program has a start • To recognise that a sequence of commands can have an order • To change the appearance of my project • To create a project from a task description
Data and information – Branching databases	• To create questions with yes/no answers • To identify the attributes needed to collect data about an object • To create a branching database • To explain why it is helpful for a database to be well structured • To plan the structure of a branching database • To independently create an identification tool
Creating media – Desktop publishing	• To recognise how text and images convey information • To recognise that text and layout can be edited • To choose appropriate page settings • To add content to a desktop publishing publication • To consider how different layouts can suit different purposes • To consider the benefits of desktop publishing
Programming B – Events and actions in programs	• To explain how a sprite moves in an existing project • To create a program to move a sprite in four directions • To adapt a program to a new context • To develop my program by adding features • To identify and fix bugs in a program • To design and create a maze-based challenge

Year 4:

Theme	Concepts studied
Computing systems and networks – The internet	• To describe how networks physically connect to other networks • To recognise how networked devices make up the internet • To outline how websites can be shared via the World Wide Web (WWW) • To describe how content can be added and accessed on the World Wide Web (WWW) • To recognise how the content of the WWW is created by people • To evaluate the consequences of unreliable content
Creating media – Audio production	• To identify that sound can be recorded • To explain that audio recordings can be edited • To recognise the different parts of creating a podcast project • To apply audio editing skills independently • To combine audio to enhance my podcast project • To evaluate the effective use of audio
Programming A – Repetition in shapes	• To identify that accuracy in programming is important • To create a program in a text-based language • To explain what 'repeat' means • To modify a count-controlled loop to produce a given outcome • To decompose a task into small steps • To create a program that uses count-controlled loops to produce a given outcome
Data and information – Data logging	• To explain that data gathered over time can be used to answer questions • To use a digital device to collect data automatically • To explain that a data logger collects 'data points' from sensors over time • To recognise how a computer can help us analyse data • To identify the data needed to answer questions • To use data from sensors to answer questions
Creating media – Photo editing	• To explain that the composition of digital images can be changed • To explain that colours can be changed in digital images • To explain how cloning can be used in photo editing • To explain that images can be combined • To combine images for a purpose • To evaluate how changes can improve an image
Programming B – Repetition in games	• To develop the use of count-controlled loops in a different programming environment • To explain that in programming there are infinite loops and count-controlled loops • To develop a design that includes two or more loops which run at the same time • To modify an infinite loop in a given program • To design a project that includes repetition • To create a project that includes repetition

Year 5:

Theme	Concepts studied
Computing systems and networks – Systems and searching	• To explain that computers can be connected together to form systems • To recognise the role of computer systems in our lives • To identify how to use a search engine • To describe how search engines select results • To explain how search results are ranked • To recognise why the order of results is important, and to whom
Creating media – Video production	• To explain what makes a video effective • To use a digital device to record video • To capture video using a range of techniques • To create a storyboard • To identify that video can be improved through reshooting and editing • To consider the impact of the choices made when making and sharing a video
Programming A – Selection in physical computing	• To control a simple circuit connected to a computer • To write a program that includes count-controlled loops • To explain that a loop can stop when a condition is met • To explain that a loop can be used to repeatedly check whether a condition has been met • To design a physical project that includes selection • To create a program that controls a physical computing project
Data and information – Flat-file databases	• To use a form to record information • To compare paper and computer-based databases • To outline how you can answer questions by grouping and then sorting data • To explain that tools can be used to select specific data • To explain that computer programs can be used to compare data visually • To use a real-world database to answer questions
Creating media – Introduction to vector graphics	• To identify that drawing tools can be used to produce different outcomes • To create a vector drawing by combining shapes • To use tools to achieve a desired effect • To recognise that vector drawings consist of layers • To group objects to make them easier to work with • To apply what I have learned about vector drawings
Programming B – Selection in quizzes	• To explain how selection is used in computer programs • To relate that a conditional statement connects a condition to an outcome • To explain how selection directs the flow of a program • To design a program that uses selection • To create a program that uses selection • To evaluate my program

Year 6:

Theme	Concepts studied
Computing systems and networks – Communication and collaboration	• To explain the importance of internet addresses • To recognise how data is transferred across the internet • To explain how sharing information online can help people to work together • To evaluate different ways of working together online • To recognise how we communicate using technology • To evaluate different methods of online communication
Creating media – Web page creation	• To review an existing website and consider its structure • To plan the features of a web page • To consider the ownership and use of images (copyright) • To recognise the need to preview pages • To outline the need for a navigation path • To recognise the implications of linking to content owned by other people
Programming A – Variables in games	• To define a 'variable' as something that is changeable • To explain why a variable is used in a program • To choose how to improve a game by using variables • To design a project that builds on a given example • To use my design to create a project • To evaluate my project
Data and information – Introduction to spreadsheets	• To create a data set in a spreadsheet • To build a data set in a spreadsheet • To explain that formulas can be used to produce calculated data • To apply formulas to data • To create a spreadsheet to plan an event • To choose suitable ways to present data
Creating media – 3D modelling	• To recognise that you can work in three dimensions on a computer • To identify that digital 3D objects can be modified • To recognise that objects can be combined in a 3D model • To create a 3D model for a given purpose • To plan my own 3D model • To create my own digital 3D model
Programming B – Sensing movement	• To create a program to run on a controllable device • To explain that selection can control the flow of a program • To update a variable with a user input • To use an conditional statement to compare a variable to a value • To design a project that uses inputs and outputs on a controllable device • To develop a program to use inputs and outputs on a controllable device

How is Computing organised in this school?

Computing allows children the opportunity to explore and create a multitude of different art and information formats using a wide range of alternative media types through iPads, Laptops and internet exploration.

Units of work in the curriculum focus on the different concepts computing and programming. Core concepts progress cumulatively across year groups and can be revisited, to secure prior knowledge & skills development.

The overall scheme of the curriculum provides for gradual progression in terms of skills (split into programming, coding, digital art and design, video and editing and audio design), introducing the children to a plethora of programs and apps.

The Computing curriculum provides for progression in terms of knowledge of different concepts and the areas of digital design and programming. The structure of the planning also provides for progression in terms of process in computing, both in terms of critical analysis of others' work and the necessary observation, exploration and evaluation needed for the children to create their own digital work as well as improve upon others and their own.

Computing at Greengate Lane is taught for an hour each week, we teach computing for six weeks each half term.

Adaptation/SEN

Computing is written as a universal core curriculum provision for all children. Teachers will tailor each theme to meet the needs of the children in their classes. To support this, children will explore a wide range of skills and techniques and work with a broad range of media to give them scope to work to their full potential.

Assessment

Teachers are eager to ensure children are making progress with their learning throughout the computing curriculum. Therefore, at the end of each theme there is an opportunity for children to share and showcase their work both to their classmates and teachers and some to parents also. This task is the formal opportunity for teacher assessment of the children's knowledge and ability of the computing concepts and digital processes taught that term. This evidence is used alongside the children's practical work gathered through shared digital spaces (i.e. Seesaw,). These assist the teacher in assessing whether a child is working at the expected level or towards or beyond it. Teachers also have access to a resource bank provided by the NCCE which supports teachers conduct formative assessments.

Pupils are assessed using the following 4 aims, as provided by the National Curriculum for Computing:

- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Are responsible, competent, confident and creative users of information and communication technology.

This is tracked throughout the year so that teachers can utilise the appropriate evidence accordingly. Assessment is conducted by class teachers in line with DfE guidance 2013 (Computing programmes of study: key stages 1 and 2 National curriculum in England) which states 'By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study'. Teachers assess against the programme of study's specific

outcomes, allowing assessments to be made against the age–related expectations of working towards, working at the expected attainment, and working beyond.

Recording and tracking progress

To support the teacher in tracking each child's progress throughout the year, teachers record the progress of the whole class through termly assessment detailed above. This supports teacher overview and facilitates subject leader monitoring and moderation.

Reporting to Parents/Carers

The assessment process described above helps teachers report to parents/carers. End of theme showcases and presentations alongside the children's digital shared space give teachers meaningful evidence to feedback to parents in twice yearly parent's evenings and end of year written reports.

The Attainment Descriptors

The attainment descriptors used for computing assessment at Greengate Lane are 3-fold to match with what the majority of schools are using, although their language may be different. At Greengate Lane we use the following language: Working Towards – not working at the age-related expectation yet, expected – working at age expectation and Greater Depth – working beyond age expected expectation.

Monitoring and evaluation

The computing leader monitors delivery of the programme through observation and discussion with teaching staff, as well as discussions with children and scrutiny of their written work to ensure consistent and coherent curriculum provision.

Evaluation of the programme's effectiveness is conducted on the basis of:

- Pupil and teacher evaluation of the content and learning processes
- Staff meetings to review and share experience
- Monitoring of assessment to ensure progression throughout the school.

External contributors

Computing gives opportunities to promote an ethos of respect for others, challenge stereotypes and build understanding of other cultures and beliefs. This contributes to promoting a positive and inclusive school ethos that champions democratic values and human rights**.** The British Values agenda supports the computing curriculum and a map of coverage is available on request.

External contributors e.g artists, workshop leaders etc. may contribute to the computing curriculum, adding memorable experiences and sharing their expertise alongside class visits to places of cultural interest. Their input is carefully planned and monitored so as to fit into and complement the programme.

Teachers are always present during these sessions and remain responsible for the effective delivery of the art programme.

The Learning Environment

Establishing a safe, open and positive learning environment based on trusting relationships between all members of the class, adults and children alike, is vital. To enable this, it is important that respect for each other's views and beliefs is encouraged at all times.

Teaching Sensitive and Controversial Issues

Sensitive and controversial issues are not common within the computing curriculum but may arise from time to time.

The themes covered are presented with sensitivity, using a variety of views and beliefs so that pupils are able to form their own, informed opinions but also respect that others have the right to different opinions. Teachers do not discuss their own beliefs with the children that they teach, this ensures that they will not influence or restrict the children's own expression.

Involving parents and carers

The school believes that it is important to have the support of parents, carers and the wider community for the computing programme. Parents and carers are/will be given the opportunity to find out about and discuss computing through:

* Response to computing comments on reports
* Curriculum newsletters
* Displays
* Computing homework, where appropriate

Withdrawal from Computing lessons

Parents/carers do not have the right to withdraw their children from all or part of the computing curriculum. Those parents/carers wishing to exercise this right are invited in to see the Principal, Kara Robinson, who will explore any concerns and discuss any impact that withdrawal may have on the child. The school will ensure that parents who want to withdraw their children from art are aware of the art syllabus and that it is relevant to all pupils, and respects their own personal beliefs. Parents will be made aware of the learning objectives and what is covered in the art curriculum and should be given the opportunity to discuss this, if they wish. The school may also wish to review such a request each year, in discussion with the parents.

The use of the right to withdraw should be at the instigation of parents and it should be made clear whether it is from the whole of the subject or specific parts of it. No reasons need be given. Where parents have requested that their child is withdrawn, their right must be respected. Once a child has been withdrawn they cannot take part in the art curriculum until the request for withdrawal has been removed.

As a school it is our duty to inform our local Standing Advisory Council on art regarding the numbers of children being withdrawn.

Links to other policies and curriculum areas

We recognise the clear link between computing and the following policies and staff are aware of the need to refer to these policies when appropriate.

- Teaching and Learning Policy
- Equal Opportunities Policy
- Child Protection Policy
- *SMSC Policy*
- *British Values*
- *Prevent Strategy*
- *Online Safety Policy*
- *Safeguarding Policy*

Training and support for staff

All staff benefit from training in order to enhance their computing delivery skills. Opportunities are provided for staff to identify individual training needs on a yearly basis and relevant support is provided.

In addition to this, support for teaching computing is offered from experienced staff, drawing on staff expertise and/or a range of external agencies.

Dissemination

This policy is available on our school website where it can be accessed by the community. Training is regularly delivered to staff on the policy content. Copies are available from the school office on request from parents/carers.

Policy Review

This policy is reviewed annually.

	Signed Headteacher	Signed Chair of Governors
Date of review:		
Date of next review:		