



# Computing at the Unity Federation



## Intent

## Our Statement

At the Unity Federation our computing curriculum intends to ensure that all of our students develop as confident, creative and adaptable digital citizens. We acknowledge that future generations will rely heavily on their computational confidence and digital skills in order to support their progress within their chosen career paths. We want to equip pupils to use computational thinking and creativity that will enable them to become active and responsible participants in the digital world. It is important to us that the children understand how to use the ever-changing technology to express themselves, as tools for learning and as a means to drive their generation forward into the future.

Therefore, it is our school's aim to equip children with the relevant skills and knowledge that is required to understand the three core areas of Computing (Computer Science, Information Technology and Digital Literacy) incorporating resources from the Chris Quigley computing curriculum and the National Centre for Computing Education to offer a broad and balanced approach to providing quality first teaching of this subject.

Computing is an integral part to a child's education and everyday life. Consequently, we intend to support our pupils to access and understand the core principles of this subject through engaging and activities. Whilst ensuring they understand the advantages and disadvantages associated with online experiences, we want children to develop as respectful, responsible and confident users of technology, aware of measures that can be taken to keep themselves and others safe online.

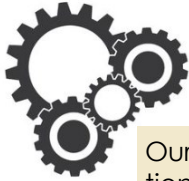
Our aim is to provide a computing curriculum that is designed to balance acquiring a broad and deep knowledge alongside opportunities to apply skills in various digital contexts. Beyond teaching computing discreetly, we will give pupils the opportunity to apply and develop what they have learnt across wider learning in the curriculum.



# Computing at the Unity Federation

## IMPLEMENTATION

### Our Statement



Our scheme of work for Computing is adapted from the 'Teach Computing' and Chris Quigley computing curricula and covers all aspects of the National Curriculum to ensure progression within substantive and disciplinary knowledge. These schemes were chosen as they have been created by subject experts and based on the latest pedagogical research. Teach Computing units provide the core planning and knowledge base for the teachers whilst the Chris Quigley milestones are used to assist with progression and coverage.

The curriculum aims to equip young people with the knowledge, skills and understanding they need to thrive in the digital world of today and the future. The curriculum can be broken down into 3 strands: computer science, information technology and digital literacy, with the aims of the curriculum reflecting this distinction.

The national curriculum for computing aims to ensure all pupils:

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

During their time in our schools' students will have access to and develop their knowledge of programmes within the Google suite, Canva, Scratch Block coding programmes and will use physical computing devices such as MicroBit, Crumble, chrome books and BeeBots. Computing lessons are implemented during each term and teachers are encouraged to incorporate programmes and technology within the wider curriculum.

### E-Safety and Digital Citizenship

A key part of implementing our computing curriculum was to ensure that safety of our pupils is paramount. We take online safety very seriously and we aim to give children the necessary skills to keep themselves safe online. Children have a right to enjoy childhood online, to access safe online spaces and to benefit from all the opportunities that a connected world can bring them, appropriate to their age and stage.

Children build online resilience through the use of the 'Project Evolve – Education for a Connected World' framework. The framework aims to support and broaden the provision of online safety education, so that it is empowering, builds resilience and effects positive culture change. The objectives promote the development of safe and appropriate long-term behaviours, and support educators in shaping the culture within their setting and beyond.



# Computing at the Unity Federation



## **IMPLEMENTATION** *continued*

### The Threshold Concepts

Our planning and assessment in history any structured around 4 main concepts

#### **Digital Literacy**

Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.

#### **Computer Science**

The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming

#### **Information Technology**

The study, use, and development of computer systems for storing, processing, retrieving, and sending information

#### **Internet safety**

Children learn how to use technology safely and respectfully. They begin to understand the dangers of what could happen if the internet is used irresponsibly and learn what to do should a situation arises.



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## **IMPLEMENTATION** *continued*

### The Teaching and Learning

Our curriculum is split into three milestones, one for each of our three mixed age classes. Teachers, use the threshold concepts to plan suitably challenging learning for the children in their class.

#### Milestone 1

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
<b>Year A</b>	Project evolve (relationships, reputation and privacy) Computer skills	Information Technology - Digital Painting	Computer Science - Programming Animations
<b>Year B</b>	Project evolve - Computer Systems and Networks - Technology around us	Digital Literacy - Technology around us	Information Technology - Grouping Data



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## IMPLEMENTATION *continued*

### The Teaching and Learning

#### Milestone 2

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
<b>Year A</b>	Project Evolve/ Digital Literacy	Information technology	Computer science - Programming A - Repetition in shapes
<b>Year B</b>	Project Evolve/ Digital Literacy Connecting computers	Information technology - Stop Frame Animation	Computer science Programming B - Events and actions in programs
<b>Year C</b>	2 Year Rolling Programme. Repeat these alternate years		



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## IMPLEMENTATION *continued*

### The Teaching and Learning

#### Milestone 3

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
<b>Year A</b>	Digital literacy	Information technology	Computer Science - Programming A - Selection in physical computing
<b>Year B</b>	Digital literacy Computing Systems and Networks - Communication + Collaboration	Information technology - Photo Editing	Computer science - Programming A - Repetition in shapes
<b>Year C</b>	Digital literacy	Information technology	Computer Science - Programming A - Variables in games



# Computing at the Unity Federation



## IMPACT

At the Unity Federation we know nothing is learned unless it rests in pupils' long-term memories.

This does not happen, and cannot be assessed, in the short term. So to measure the impact of our history curriculum we try to explore the answers to two main questions:

- How well are pupils coping with the curriculum content?
- How well are they retaining previously taught content?

We explore this through:

### **Assessing Learning:**

Before, during and after lessons.  
Using the assessment statements  
for each milestone.

### **Monitoring:**

Subject leadership monitoring  
and Governor monitoring, fol-  
lowing our monitoring schedule.



# Computing at the Unity Federation

## IMPACT *continued*

Progression through the milestones



	Milestone 1/EYFS	Milestone 2	Milestone 3
<b>Digital Literacy</b> Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.	<ul style="list-style-type: none"><li>• Understand how to turn on a chrome book or similar devices</li><li>• Knows basic computer controls (click on track pad, keyboard keys – shift, delete, return, space bar).</li><li>• Can look after computing equipment.</li><li>• Keep personal information private when using technology</li><li>• Knows who to contact for help if they are unsure about online content or contact.</li><li>• Participate in class social media accounts (e.g dojo, seesaw).</li><li>• Understand online risks and the age rules for sites.</li></ul>	<ul style="list-style-type: none"><li>• Understand online risks and the age rules for sites.</li><li>• Recognise acceptable online content.</li><li>• Give examples of the risks posed by online communications.</li><li>• Contribute to blogs or online content moderated by teaching staff.</li><li>• Recognise acceptable online behaviour.</li><li>• Understand that comments made online that are hurtful or offensive are the same as bullying.</li><li>• Understand the term 'copyright'.</li><li>• Understand how online services work.</li><li>• Is selective when using digital content.</li><li>• Can appreciate how search results are selected.</li></ul>	<ul style="list-style-type: none"><li>• Collaborate with others online on sites approved and moderated by teachers.</li><li>• Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems.</li><li>• Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder.</li><li>• Understand the effect of online comments and show responsibility and sensitivity when online.</li><li>• Understand how simple networks are set up and used.<ul style="list-style-type: none"><li>• Is discerning in evaluating digital content.</li><li>• Appreciates how search results are ranked.</li></ul></li></ul>





# Computing at the Unity Federation



## IMPACT *continued*

Progression through the milestones

	Milestone 1/EYFS	Milestone 2	Milestone 3
<b>Computer Science</b> The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming	<ul style="list-style-type: none"><li>• understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions</li><li>• create and debug simple programs</li><li>• use logical reasoning to predict the behaviour of simple programs</li><li>• use technology purposefully to create, organise, store, manipulate and retrieve digital content</li><li>• recognise common uses of information technology beyond school</li><li>• use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies</li></ul>	<ul style="list-style-type: none"><li>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li><li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li><li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li><li>• 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</li><li>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</li><li>• 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</li><li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li></ul>	



# Computing at the Unity Federation



## IMPACT *continued*

Progression through the milestones

	Milestone 1/EYFS	Milestone 2	Milestone 3
<b>Information Technology</b> The study, use, and development of computer systems for storing, processing, retrieving, and sending information	<ul style="list-style-type: none"><li>• Use a range of applications and devices in order to communicate ideas, work and messages.</li><li>• Can access simple paint and writing software with adult support.</li><li>• Use simple databases to record information in areas across the curriculum.</li></ul>	<ul style="list-style-type: none"><li>• Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.</li><li>• Can choose an appropriate programme or app to complete a task</li><li>• Access DNEAT google apps independently</li><li>• Devise and construct databases using applications designed for this purpose in areas across the curriculum.</li></ul>	<ul style="list-style-type: none"><li>• Choose the most suitable applications and devices for the purposes of communication.</li><li>• Use many of the advanced features in order to create high quality, professional or efficient communications.</li><li>• Uses Google classroom to view and respond to tasks set by the teacher.</li><li>• Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.</li></ul>



# Computing at the Unity Federation



## IMPACT *continued*

Progression through the milestones

	Milestone 1/EYFS	Milestone 2	Milestone 3
<b>Internet Safety –</b> Self-image and identify	<ul style="list-style-type: none"><li>• Recognise online or offline that anyone can say 'no' to somebody who makes them feel uncomfortable.</li><li>• Recognise that there are people online who may make you feel uncomfortable.</li><li>• Can give examples of how to ask for help.</li><li>• Can explain how others may look and act differently online.</li><li>• Can give examples of issues online.</li></ul>	<ul style="list-style-type: none"><li>• Explain what identify means.</li><li>• Know that people can present themselves in different ways online, and that some people change their identify online.</li><li>• Describe positive ways to interact with others online, and making a positive impact.</li><li>• Can understand that pretend to be somebody else online, and the risks of this.</li><li>• Can identify, and critically evaluate online content relating to gender, race, religion, disability, culture and other groups and explain why it is important to challenge and reject inappropriate representations online.</li><li>• Can explain the importance of asking for help.</li></ul>	



# Computing at the Unity Federation



## IMPACT *continued*

Progression through the milestones

	Milestone 1/EYFS	Milestone 2	Milestone 3
<b>Internet Safety – Online relationships</b>	<ul style="list-style-type: none"><li>• Can recognise that we can communicate online and how we can do this.</li><li>• Can say when they would need to ask permission to use something online.</li><li>• Use the internet with adult support to communicate.</li><li>• Can explain why its important to be kind and considerate when online.</li><li>• Can explain the risks of communicating with someone they do not know offline, and why someone would do this.</li><li>• Can give or deny permission online, and know why permission of others should be asked.</li></ul>	<ul style="list-style-type: none"><li>• Can explain the ways the people online can get along when they have the same interests.</li><li>• Can explain that 'knowing' someone online is different to offline.</li><li>• Can explain what it meant by 'trusting someone online' and why this is different from 'liking someone online' and why it is important to be careful about who to trust online and what information to share.</li><li>• Can be confident in knowing they can change their mind about trusting someone online who made them feel uncomfortable.</li><li>• Know that some online content can hurt people's feelings.</li><li>• Explain the importance of giving and gaining permission before sharing things online.</li><li>• Can describe ways of being safe and having fun with others online.</li><li>• Give examples of how to be respectful to others online and recognise healthy and unhealthy online relationships.</li><li>• Can understand that information online can influence people's beliefs.</li><li>• Can give examples of technology-specific forms of communication (emojis, gifs, memes).</li><li>• Can explain that some people online may want to do harm to others, and recognise that it is not the victim's fault.</li><li>• Can describe how some people may be part of online communications and evaluate the advantages and disadvantages of this.</li><li>• Can explain how taking and sharing inappropriate images of somebody even if they say its okay, may have an impact on the sharer.</li></ul>	



# Computing at the Unity Federation



## IMPACT *continued*

Progression through the milestones

	Milestone 1/EYFS	Milestone 2	Milestone 3
<b>Internet Safety – Online Reputation</b>	<ul style="list-style-type: none"> <li>• Can identify ways to put information online.</li> <li>• Understand the information stays online and can be copied.</li> <li>• Describe information that shouldn't go online.</li> <li>• Can understand that information online can be seen by others.</li> </ul>	<ul style="list-style-type: none"> <li>• Can search for information on other people online.</li> <li>• Know what people would be willing and unwilling to share online and why.</li> <li>• Can ask for help and advice on sharing things online.</li> <li>• Know that information online can be shared, copied and changed.</li> <li>• Can explain strategies anyone can use to protect their 'digital personality' and online reputation including degrees of anonymity.</li> <li>• Know organisations to go to about online bullying (ChildLine, TheMix).</li> <li>• Can explain how to block abusers.</li> <li>• Can capture bullying content for evidence e.g. screenshots</li> <li>• Can describe how what one person perceives as 'banter' might be experienced by others as bullying.</li> <li>• Explain how to behave appropriately online, and give examples of online bullying.</li> <li>• Explain why people need to think carefully about what they post online and how it can be perceived by others.</li> <li>• Can explain the difference between a 'belief' 'opinion' and 'fact.'</li> <li>• Can use key phrases in search engines to gather accurate information online.</li> <li>• Can explain what autocomplete is and how to choose the best suggestion.</li> <li>• Can understand that not all opinions online will be accepted as true or fair.</li> <li>• Can analyse and make a judgment on the accuracy of information online. Can explain what is meant by 'fake news'</li> <li>• Can describe some of the methods used to encourage people to buy things online e.g. pop up ads.</li> <li>• Can explain that technology can be used to impersonate living things e.g. AI and describe the benefits and risks of this.</li> </ul>	
<b>Internet Safety – Online Bullying</b>	<ul style="list-style-type: none"> <li>• Know ways people are unkind online, and say how this would feel.</li> <li>• Know how to behave positively online.</li> <li>• Can explain why online bullying is.</li> <li>• Know how to get help for online bullying.</li> </ul>		
<b>Internet Safety – Managing online information</b>	<ul style="list-style-type: none"> <li>• Can say how to use the internet for finding information.</li> <li>• Know the risks of finding things online that make us feel uncomfortable.</li> <li>• Can know the difference between things that are 'made up' and that not all information online is true.</li> </ul>		





# Computing at the Unity Federation



## IMPACT *continued*

Progression through the milestones

	Milestone 1/EYFS	Milestone 2	Milestone 3
<b>Internet Safety – Health, Wellbeing and Lifestyle</b>	<ul style="list-style-type: none"> <li>Can come up with rules to stay safe online.</li> </ul>	<ul style="list-style-type: none"> <li>Can explain why spending too much time using technology can sometimes have a negative impact on anyone. Can give tips for helping with wellbeing using technology.</li> <li>Can explain why some online content have restrictions why it is important to follow them and know who to talk to if others are making them feel uncomfortable.</li> <li>Can know how technology can give a distraction from other things, both positively and negatively.</li> <li>Can understand times and situations where technology use may need to be limited.</li> <li>Can recognise features of persuasive design and how they are used to entice people.</li> <li>Can assess and action different strategies to reduce impact technology has on wellbeing.</li> <li>Can describe simple strategies for creating and keeping passwords private.</li> <li>Can give reasons as to why people should only share information with people who they trust.</li> <li>Can know that devices can collect and share data.</li> <li>Can explain that internet use is never fully private.</li> <li>Can describe how some online services may seek consent to store information about me.</li> <li>Know the digital age of consent and the impact this has on online services asking for consent.</li> <li>Can explain why copying someone's work from the internet without permission isn't fair.</li> <li>Consider who owns content online when wanting to use it.</li> <li>Can give examples of some content which wouldn't be appropriate to use without consent e.g. music and videos.</li> <li>Can assess and justify when it is acceptable to use the work of others.</li> <li>Can give example of work that is permitted to be reused.</li> <li>Can demonstrate how to use references to acknowledge sources on the internet.</li> </ul>	
<b>Internet Safety – Privacy and Security</b>	<ul style="list-style-type: none"> <li>Know what personal information is</li> <li>Know who is a trustworthy person to share personal information with</li> <li>Explain how passwords are used to protect them</li> <li>Can explain what private means</li> </ul>		
<b>Internet Safety – Copyright and ownership</b>	<ul style="list-style-type: none"> <li>Know that work I create is mine and that other peoples work is their</li> <li>Can save work using a suitable name</li> </ul>		



# Computing at the Unity Federation



**IMPACT** *continued*

Vocabulary Progression

<u>Milestone 1</u>	<u>Milestone 2</u>	<u>Milestone 3</u>
<p>Algorithm, attribute, code, code snippet, command, computer, data, debugging, information, information technology, programme, property, run, technology.</p>	<p><b>Algorithm, attribute, code, code snippet, command, computer, data, debugging, information, information technology, object, programme, property, run, technology.</b></p> <p>Browser, condition, digital device, domain name, hardware, Hyper Text Markup Language (HTML), hyperlink, input, input device, internet, network, object, output, process, repetition, router, selection, server, software, stored, switch, variable, web, web address, web browser, web page, website, WiFi, world wide web (WWW)</p>	<p><b>Algorithm, attribute, code, code snippet, command, computer, data, debugging, information, information technology, object, programme, property, run, technology.</b></p> <p><b>Browser, condition, digital device, domain name, hardware, Hyper Text Markup Language (HTML), hyperlink, input, input device, internet, network, object, output, process, repetition, router, selection, server, software, stored, switch, variable, web, web address, web browser, web page, website, WiFi, world wide web (WWW)</b></p> <p>Computer network, computer system, condition controlled loop, count controlled loop, data set, decompose, execute (run), infinite loop, loop (condition controlled), loop (count controlled), loop (infinite), output device, procedure, subroutine, uniform resource locator (URL), Wireless access point (WAP).</p>