HIGHER FAILSWORTH PRIMARY SCHOOL

Computing

ACHIEVE TEAM

Computing

Intent

At Higher Failsworth, we aim to allow children to develop their understanding of socially responsible use of technology. We aim for children to use technology in a safe way, both inside and outside of the school setting. We allow children to use a range of technologies and software (inc. desktops, I-pads, beebots, IWB, chromebooks) in order for them to have a breadth of experience in becoming digitally literate young people/ adults. We develop children's knowledge and understanding of computer science in order for them to be able to rival peers working within the computer science industry . We allow children to develop their resilience, problem solving and critical thinking through the teaching of all 3 areas of the National Curriculum; Computer Science, Information Technology and Digital Literacy. At HFPS we believe safety is paramount. We promote and model a balanced digital life, recognising that amongst the many positives that technology has to offer, risks exist and children need to be taught to manage their digital lives properly. We strive to model and educate our children to use technology creatively, positively, responsibly and safely. Our curriculum supports the key aims of the government's Internet Safety Strategy (Digital Literacy / UK Council for Child Internet Safety (UKCCIS) framework) of supporting children to stay safe and make a positive contribution online, as well enabling teachers to develop effective strategies for understanding and handling online risks.

Implementation

The curriculum at HFPS is carefully mapped out to ensure that pupils acquire knowledge, vocabulary and skills in a well-thought out and progressive manner, with each teacher following the Knowsley Computing Scheme of Work and progression document. The Knowsley scheme highlights the knowledge, skills and vocabulary for each year group and is progressive from year to year. New learning is based upon what has been taught before and prepares children for what they will learn next. Our Computing curriculum is broken down into 4 strands across every year group. These are, Essential Skills, Computer Science, Digital Literacy and Information Technology.

Impact

In our Computing curriculum the children revisit each objective several times, via different themes helping to ensure the best results are achieved. We have developed 'What to observe in learning' grids to support the monitoring of our children's learning expectations. We encourage discussions between staff and pupils to help the children best understand their progress and their next steps. We also encourage pupils to document their own learning in pupil journals. These journals can also be used to showcase and celebrate computing work as well as providing evidence of the pupil's knowledge and digital skills.

We measure the impact of our curriculum in the following ways:

- Pupil discussions
- Pupil journals and assessment/feedback on content creation.
- Photo evidence of the pupils practical learning.
- Video analysis through recording of performance or practical learning in lessons.
- Pupil self reflection.
- Learning walks and reflective staff feedback (teacher voice).
- Dedicated Computing leader time.
- The use of teacher assessments at the end of a series of lessons to identify gaps in children's learning (FFT)

Computing

We want pupils at Higher Failsworth to become:

- Become competent using a range of programmes
- Develop children who are resilient and good problems solvers
- Develop critical thinkers
- Become digitally literate

We ensure our pupils receive:

- Good access to a range of hardware and software to develop their skills across the wider curriculum
- Adequate progression throughout their time at HFPS
- Appropriate differentiation where needed

What does the National Curriculum tell us?

Aims

The national curriculum for computing aims to ensure that all pupils:

- 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.

Subject content

Key stage 1

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- 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.

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.

Coverage overview

Topic	Year Group						
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mandatory Skills							
Computational Thinking							
Controlling Robots							
STEM Activities							
Programming / Coding							
IT Concepts / Hardware / Networks							
Game Design							
Typing / Word Processing / Presenting							
Digital Storytelling							
Multimedia / Creative Apps							
Data Handling							
2D & 3D Modelling							
Animation							
Photography / Film Making							
Digital Literacy (Websites / Searching / Communication)							
Online Safety							

Progression

The Computing curriculum is carefully mapped out to ensure that pupils acquire knowledge, vocabulary and skills in a well-thought out and progressive manner, with each teacher following the Knowsley Computing Scheme of Work and progression document. The Knowsley scheme highlights the knowledge, skills and vocabulary for each year group and is progressive from year to year. New learning is based upon what has been taught before and prepares children for what they will learn next.

EYFS Early learning goals for Computing

The EYFS curriculum supports children's understanding of Computing through the planning and teaching of a range of areas from the Early Learning Goals and the Development matters document. We give our children opportunities through the use of provision areas, to develop such skills as; algorithmic thinking, understanding patterns and logical thinking. This allows the children to be more prepared for the statutory teaching from Year 1.

Essential:

Age appropriate skills for the use of core devices and applications within their setting.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: about types of technology both in and outside of school. how to use classroom technology safely and responsibly, including the basic use of a camera and going online.	The children learn: to explore and experiment with technology in order to build familiarity with classroom apps and devices. basic photographic and video techniques to document their own learning.	The children learn: to create a range of simple digital documents that represents their learning during a topic and then save/share their digital work.	The children learn: to be more independent and are encouraged to attempt to fix a problem they may have before asking for help on their device. about different media and file types.	The children learn: about physical input and output slots on a device. E.g. USB, HDMI, etc. about how to save their work in a range of locations. the best way to save their files. E.g. as an image (jpeg) to share online.	The children learn: how to create a QR Code. about uploading work to a cloud or blog. advanced techniques to tell a story using technology/ multiple apps. about advanced film making elements such as sound and lighting.	The children learn: about collaboration and sharing documents with other children in order to create digital content. advanced features of common office/ classroom apps.

(CS) Computational Thinking:

Key Stage 1: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.

Key Stage 2: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: that an algorithm is a list of instructions that solves a problem. to sequence a series of events and explain the importance of sequencing.	The children learn: to explore algorithms and sequencing of instructions. to read, follow and create a simple sequence algorithm. to give these instructions so that they can be executed by a robot with the aim of successfully reaching a destination.	The children learn: about writing algorithms that can be turned into programs. to implement their algorithm as a program on a digital device or programmable toy/ robot.	The children learn: to create a detailed flow diagram using the correct symbols. to turn an algorithm into a simple program on a digital device. about testing the program and recognising when it needs to be debugged.	The children learn: to design a simple algorithm to show a real- life situation. about the valuable skills of abstraction and decomposition when tackling more complex problems.	The children learn: to explore problem solving and decomposition. to independently plan, write and test their algorithms and create more complex programs, debugging as needed. about controlling / simulating physical systems and using sensors with multiple outcomes.	The children learn: to create complex algorithms and turn their designs into a program (incorporating variables, procedures and different forms of input and output).

(CS) Coding:

Key Stage 1: Create and debug simple programs.
Key Stage 2: Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: to experiment controlling a range of 'toys' using remote controls and do this with purpose and direction.	The children learn: to create a simple program and correct mistakes (debug).	The children learn: to independently identify and fix a 'bug' in multiple programs. to create a simple program that includes a repeat x times loop. the difference between inputs and outputs.	The children learn: to create their own sprite in Scratch/ Scratch Jr. about sequencing commands and adding a repeat command in a program. how to refine/ improve a program by using the repeat command. how to create a variable. to create a program that contains selection, inputs and outputs.	The children learn: about the structure of a program and learn to plan in logical, achievable steps. to write a complex program, incorporating features such as selection, inputs, repetition, variables and procedures. attempt to debug their own programs and corrects/ debugs errors in code.	The children learn: to create their own complex game within Scratch or other block based coding app that uses variables, event handling, selection ("If" and "Then"), procedures and repetition (loops) to increase programming possibilities.	The children learn: about complex programs and are encouraged to persevere when solving difficult problems even if the solution is not obvious. about executing and adapting common commands using a text-based language e.g. Python/Javascript/ SwiftPlayground.

(CS) Logical Reasoning:

Key Stage 1: Use logical reasoning to predict the behaviour of simple programs.
Key Stage 2: Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: through play about action/reaction and will be asked "what do you think will happen?" when using technology or attempting to solve a problem.	The children learn: about making predictions when using technology. E.g. They will be asked to predict what will happen for a short sequence of instructions in a program.	The children learn: to offer accurate predictions of programs and then create their own simple program to check if they were correct.	The children learn: about using logical reasoning to detect potential problems in an algorithm or program which could result in something going wrong and then offer ideas of what is needed to fix/ debug it.	The children learn: to recognise an error in an existing program and attempt to debug/ fix the program. to investigate existing programs, evaluating them and consider how they could be improved.	The children learn: to explore logical reasoning in greater depth and learn to give well-thought-through explanations of any errors they identify in program code (using the correct terminology).	The children learn: to independently use logical reasoning to detect and correct errors in an algorithm and program. that there is often more than one way to solve a problem in an algorithm or program.

(CS) Networking:

Key Stage 1: N/A

Key Stage 2: Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: how to access the web on a classroom device.	The children learn: about signing into a device or online platform.	The children learn: multiple services use the internet e.g. email, web and streaming.	The children learn: the World Wide Web is only one part of the Internet, the part that contains websites. to send an email and understands how this works. how information travels through computer networks.	The children learn: about the key services that can be used to communicate on the internet. to recognise the main components (hardware) which allow computers to join and form a network.	The children learn: about software, hardware and types of connected computers. about how data travels via the internet including binary. more about the different parts of the Internet and services. to create a basic web page using HTML.	The children learn: in more detail about how information/data is transported on the Internet and between computers using packets and IP addresses. about the opportunities computer networks and the internet offer for communication and collaboration.

(CS) Online:

Key Stage 1: N/A

Key Stage 2: Appreciate how [search] results are selected and ranked.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: to type keywords in a search engine (Google).	The children learn: how they can use a search engine to find answers and different types of media e.g. videos.	The children learn: the basic skills of searching and navigating the results in a search engine.	The children learn: about key words. that search engines try to put the most useful websites at the top.	The children learn: that search engines use algorithms to sort websites.	The children learn: key skills for using a search engine. about the settings that can alter your search results.	The children learn: to explore advanced features within search engines and learn to use them effectively. how search results are selected and ranked by algorithms.

(IT) Harnessing Technology:

Key Stage 1: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. *
Key Stage 2: 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. *
* In addition see the "I know how to" big digital skills statements which provide a simple progression of digital skills from reception to year 6. The document links to the Knowsley CLCs computing scheme of work.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: how various devices and apps can be used in the classroom. to independently choose an application for a particular purpose. E.g drawing a picture.	The children learn: to create different types of digital content (short video, ebook or presentation). to combine text and images in a document that showcases learning or tells a story. to use technology to collect, sort and display information that could include data, photos, video or sound. about saving work in a special place and retrieve it again.	The children learn: to create a presentation or basic digital book that is well designed, contains formatted text, images and presents information. to read a simple database to find information. about organising the data they collect. they can create digital content using more than one app or piece of software. to independently save and open files on the device they use.	The children learn: to create digital content using a range of mixed tools/media and how to improve its design. to be creative and independent while using unfamiliar apps or technology to create content. to create a plan/ storyboard when producing digital content. to design a simple questionnaire to collect information, and display the information in a graph or table. to add information to a database.	The children learn: to produce documents, media and presentations with increasing independence and competency that present data/ information. to use a keyboard confidently and make use of tools such as a spellchecker. about new forms of technology E.g. AR, Virtual Reality, Wearable Technology etc.	The children learn: to produce digital content in a given format e.g. podcasts, videos, AR, virtual reality, 3D, digital music or illustrations. about planning including elements that they may need to source from other services. to build on the skills they have already developed to create content using unfamiliar technology. to use a spreadsheet / database to collect, record data and to use simple formulae.	The children learn: to create digital storyboards with a complete narrative of the project or investigation. to confidently identify the potential of unfamiliar technology to increase their creativity. to source, store and combine copyright free images from the internet. to independently select, use and combine the appropriate technology/app tools to create effects that will have an impact on others and tell a story.

(IT) Online:

Key Stage 1: N/A

Key Stage 2: Use search technologies effectively.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: to type keywords in a search engine (Google).	The children learn: how they can use a search engine to find answers and different types of media category e.g. images, book, videos.	The children learn: the basic skills of searching and navigating the results in a search engine to answer questions.	The children learn: that the top search results can be manipulated and are based on things like most popular, recently updated. about filtering results by adding more detail or using advanced tools. to use search engines to collect information.	The children learn: to search for and use information from a range of sources. about making notes from information found on websites to present their findings. that not all sources of information including websites are accurate and can check information using a different sites.	The children learn: to use complex searches and advanced tools to find, select and use information. check the reliability of information on the internet.	The children learn: to use complex searches, filters and advanced tools to find, select and use information

(DL) Technology in the Real World:

Key Stage 1: Recognise common uses of information technology beyond school.
Key Stage 2: Understand the opportunities [networks] offer for communication and collaboration.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: to recognise and discuss common uses of information technology in school and outside of school.	The children learn: about the uses and purpose of technology in the classroom, at home, work and the world around them. about some of the common ways in which technology at home can be used.	The children learn: about the numerous methods of online communication and how it is used in the world around them. to explore their own use of the internet and why it is important to stick to the rules.	The children learn: that the internet is a computer network. that the internet can provide multiple services, such as the world wide web, streaming music/ video and email. explore a web sites journey from first request to appearing on the screen. to learn advanced web terminology e.g. URL.	The children learn: to differentiate between apps that use the Internet, the school network or that are self contained on a device. to use computing to communicate and collaborate. about documents and methods of collaboration over the internet e.g. blog.	The children learn: about different online communication tools/apps and how they could be used for different purposes e.g. work and social. about working in a group using collaborative tools.	The children learn: about digital crimes and threats that might exist online. E.g. worms, trojans, viruses, spyware, ransomware and malware. about anti-virus software and how they can help protect devices from infection. advanced web terminology e.g. firewall, security updates, pop up blocker, scams, phishing, HTTPs, location based settings, in app purchasing, trolling, filtering etc.

(DL) Media & Content:

Key Stage 1: N/A

Key Stage 2: Be discerning in evaluating digital content.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: that there are many different types of media content including; sound, images, books, podcasts/ audiobooks and video via the web.	The children learn: to access different types of media content on their device. Including; sound, images, books, podcasts/ audiobooks and video via the web.	The children learn: where different types of media content can be found online. Including; sound, images, books, podcasts/ audiobooks and video via the web.	The children learn: how to make judgements about the usefulness and accuracy of information. about the term 'fake news'. about what copyright is and why we have copyright laws. to recognise copyright material.	The children learn: more about what Fake News is, it's purpose and that Fake News can be found on all media. how to identify Fake News. that data can be manipulated to make Fake News appear to be true.	The children learn: about how and why information found on some sites will be biased. how to source copyright free materials to use in their digital projects. how to credit the use of websites in their work and why this should be done.	The children learn: to explore in more depth the legal and moral reasons not to plagiarise or infringe copyright and the impact it can have on the creator of the content.

(DL) Online Safety:

Key Stage 1: 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. *

Key Stage 2: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. *

* Each year group has a '**My Online Life**' topic which aims to ensure your school meets the requirements of the UKCIS Education for Connected World Framework.

Reception Year

The children learn:

- the Internet can be used to communicate with others.
- simple online safety rules.
- people create online content such as video and websites.

Year 1

The children learn:

- how to access and search the web.
- to identify people they can trust and who they can ask for help when using the internet.
- to send a digital message.
- how they should behave and interact with others in the online world.
- why it is very important not to over share, share things that are personal or may hurt other people.
- the ways that some people can be unkind online.
- about following sensible online rules.
- safe behaviours in their day to day world such as not talking to or meeting strangers and how this applies in the online world.
- what a username and password is and that they must keep them private.
- that online content such as video,
- images, websites and games are created and shared by people.
- that to use other people's work without asking or giving credit is wrong.

Year 2

The children learn:

- about safe and unsuitable sites/apps. e.g. PEGI rating.
- to talk to a trusted adult before sharing personal information online and using strong passwords.
- that the characters and people they interact with may be computer generated / including games.
- the differences between the Internet and the physical world.
- sending a message and why it is important to communicate in a polite manner.
- that login details and passwords should only be shared with trusted adults.
- that copyright is something that prevents people stealing other people's work (content).
- what personal information is and that they need to talk to a trusted adult before sharing online.
- how some information may be inaccurate or untrue.
- to independently use a search engine, navigate a website, use favourites, bookmarks or typing the URL.
- that you can be connected to many people in your life (real life and online).
- to ensure a trusted adult is aware of who they are interacting with online.
- to explain some of the potential risks when posting something to the internet.
- that once something is posted others can read the post and share it.

Year 3

The children learn:

- the SMART rules about using the internet safely and responsibly.
- what personal information is and what they shouldn't be sharing.
- they should pause before posting and consider the potential consequences.
- who they should seek help from about online concerns.
- the correct and sensible choice when presented with hypothetical scenarios.
- how to send and reply to online messages, such as email, respectfully and understand the difference between online and face-to face.
- how to use the safety features of websites as well as reporting concerns to an adult they trust.
- what online bullying/ cyberbullying is and some of the forms it can take.
- how to report any concerns and who they consider a trusted adult.
- they need to have a balanced approach to their use of technology.
- to make good choices about how long they spend online.
- to recognise websites and games appropriate for their age. E.g. PEGI rating.
- online accounts need to be signed in to and why passwords should never be shared.
- what makes a secure password and why they are important.
- how to use a password security checking tool.
- what represents an online identity E.g. images, username, information shared and digital footprint.
- to post positive comments online.

Year 4

The children learn:

- the potential risks and ways they can protect themselves and friends from harm online.
- the safety features of websites and apps. e.g. block or report.
- they should report concerns to a trusted adult.
- the Internet is a great place to develop rewarding relationships.
- not to reveal private information to a person they know only online.
- that friends/followers profiles may not reflect the truth about their real lives.
- the term 'digital footprint' and that the information they put online leaves a digital footprint or "trail" which can be positive and negative.
- to search for their own name and usernames in Google to test their digital footprint.
- how they should act appropriately & respectfully online.
- how to deal with online bullying.
- how photos can be altered digitally and the creative upsides of photo alteration, as well as its power to distort perceptions of beauty and health.
- why copyright laws exist and presenting others work as one's own is called plagiarism.
- to use a copyright free image gallery, or they can change the search criteria.
- the positive and negative effects technology may have on their health.
- why they need to ask a trusted adult before downloading files and games from the Internet. E.g. virus.
- to choose a secure passwords.
- why using an avatar and online name is advisable.

Year 5

The children learn:

- to demonstrate and explain the importance of communicating kindly and respectfully.
- about the negative online behaviours such as bullying, trolling, griefing and harassment.
- about empathy and the effects of online bullying.
- anything they post online can be seen, re-shared, re-used and may have a negative effect on others.
- about the 'Digital 5 a Day' plan and that they need to have a balanced approach to their use of technology.
- what makes a secure username and password.
- why people set up fake accounts or copy others identities.
- what an online identity or internet persona is, e.g. social identity in online communities and websites (Facebook, Instagram, YouTube etc) including photos and posts.
- how to avoid being tricked by scammers online. E.g. Phishing emails. The child can explain why an app may be free but have in-app purchasing and what that is.

Year 6

The children learn:

- the advice they should/would give friends about making good choices online.
- the consequences of making poor online choices. E.g. Online bullying, Inappropriate comments (racially or sexually orientated), uploading inappropriate material (adult / illegal / anti social), accessing inappropriate sites (anti-social or illegal behaviour / adult content) and breaching copyright laws.
- the way men and women can be stereotyped in movies and TV.
- when to seek help from a trusted adult and not to try and deal with online situations on their own.
- how to block and report inappropriate comments or behaviour online. how to maintain healthy positive relationships with others while online.
- behaviours and strategies to prevent and stop online bullying.
- The child knows and can list the websites and agencies they can contact in case they need help.
- what steps they can take to create a 'positive online image' including defining acceptable and unacceptable online behaviour and the benefits this will have to them now and in the future.

Computing - Long Term Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year R	My Online Life (DL)	Talking Technology (IT)	Nursery Rhyme: Coding (CS)	Technology and me (DL)	Animal safari (IT)	Robots (CS)
Year 1	My Online Life (DL)	Mini Beasts (IT)	What is a computer? (CS)	Modern Tales (DL)	News Presenter (IT)	My Friend the robot (CS)
Year 2	My Online Life (DL)	Presentation and typing (IT)	Making games (CS)	Online Buddies (DL)	Story Land (IT)	Code a story (CS)
Year 3	My Online Life (DL)	Be digitally Awesome (IT)	Dancing Robot (CS)	Online Detectives (DL)	Rainforests (IT)	Programming (CS)
Year 4	My Online Life (DL)	Endangered Animals (IT)	Hour of code (CS)	Fake or real? (DL)	Dinosaurs (IT)	Games Designer (CS)
Year 5	My Online Life (DL)	Making AR Games (IT)	Lost in Space (CS)	YouTuber (DL)	Binary Messages (IT)	Web designer (CS)
Year 6	My Online Life (DL)	VR worlds (IT)	Chicken Run: Crossy roads (CS)	Online Safety- Dilemmas (DL)	Money (IT)	Coding playground (CS)