Computing progression of skills and knowledge

Information Technology (Creating digital content and computer skills)

Year 1

Text and images

Add, move and resize images then add text and adjust and placement

Add, resize and place images on a page then add position text to label and describe images

Use word banks to write sentences about images

Comic creation

Add a suitable background to a panel(s)

Use different controls to move around a comic and make space (zoom, minimise menus)

Add, resize, move and rotate objects, including characters

Add and resize text boxes and speech bubbles

Music creation

Create a rhythm using a pattern of beats

Create digital sounds using patterns and shapes

Create a simple melody using patterns and adjust tempo

Digital art

Change the colour of individual pixels to accurately re-create a basic artwork then detailed artwork

Make changes where required

Design

Change the colour and pattern of elements

Position and rotate objects on a design

Position objects in relation to each other

Computing skills:

Move cursor and left click to select

Click and drag to move items

Find letters on a keyboard and begin touch typing

Year 4

Animation

Create a stop-motion video by duplicating slides (frames)

Create animation using transition effects (motion paths, pulse)

Animate individual elements of objects

Create animation GIF flies by animating pixels

3D design

Understand 3D special awareness

Add 3D shapes, resize, adjust height, duplicate and use the different perspective

Re-create different types of building using 3D shapes

Create roads/paths by adjusting the height of 3D shapes

Add windows and door shapes

Internet research

Use search technologies to find specific pieces of information

Reference the correct source of information

Be discerning in evaluating digital content

Check the internet for fake news by cross-referencing facts

Video editing

Add clips then order and resize them

Add titles to clips and change themes

Add voiceovers and music

Add filters to clips

Export a project

e-book creation

Add page colour and style then position and format text

Add and position images from camera/internet

Add audio, including hiding behind an object

Add hyperlinks to text and images

Add and format shapes

Use hyperlinks for navigation

data handling

find and present data as a table and suitable chart

Give chart a suitable title and label axis correctly

Select and use non-adjacent cells and resize multiple cell widths

Typing:

Develop correct hand and finger position for touch typing

Year 2

Introduce data handling

Understand what data is and collect it as a tally

Label a pictogram and add data to each column

Edit a table with correct titles and numbers

Create a bar chart/pie chart/line chart suitable for the data

Interpret a pictogram/bar chart/line chart

E-book creation

Add a book cover with title, author, colour and image

Add multiple pages based on a theme

Add text on different pages

Add images on different pages to match the them/text

Add voice recordings to match the text and theme

Introduction to animation

Add a background and objects to a frame

Copy/clone a frame and move objects to create an animation

Create screen-recoding animation

Create stop-motion animation with photos

Digital art

Use lines and fill tools to make interesting patterns

Add a variety of shapes (outlines and fill) and label them with text

Recreate graphics using pixels and colours

Typing:

Begin touch typing with home row

Year 3

Comic creation

Add, resize and organise colour or picture backgrounds

Add, resize, organise characters/objects to different panels

Add narration using text and direct speech using speech bubbles

Music creation

Create ascending and descending scales

Add chords evenly across the scales

Add arpeggios and melodies

Add a steady and even rhythm

Use sampled sounds to create an effective mix

Build beats, melody (tones) and effects

Document editing and creation

Copy and paste text and images

Find and replace words

Format text for a purpose

Digital art

Use various lines and fill tool plus copy/paste and rotation to create pattern effects

Use shapes, fill. Copy/paste, zoom and flip to create reflective symmetry effects

Use stamps, copy/paste layers and multiple frames to create animated GIF computer graphics

Game creation (non-coding)

Design, add and animates backgrounds

Design and add characters/objects

Design and add platforms

Create an app store listing with icon, effective description and screenshot

3D design

Understand and use 3D space on a grid

Recreate or design familiar 3D models using cubes, such as tables and chairs

Use chisel tool to improve and adapt models

Colour individual blocks or whole models

Typing:

Develop correct hand and finger position for touch typing

Year 6

Computers: past, present and future

Understand how technology has changed over time. Combine text and images to present ideas

Understand the impact (positive/negative) technological changes have on society

Predict how technology will change in the future

Photo editing

Take and crop a screenshot and understand ratios

Adject the colours, brightness, contrast and filters

Add drawing and text layers

Import new images as layers and resize/add effects

Save finished image to use in other projects

Virtual reality (VR)

Understand what VR is and how it can be used to help people

Add, mover and resize object in a VR environment

Animate objects for realism

Use code block to add movement (with grouping) and interactions (conditions)

Create multiple scenes of VR environments

Web design

Add and format text within a website

Organise sections of web-pages and multiple pages with relevant titles

Add and edit images

Include other features such as hyperlinks, buttons and files

Evaluate other websites an provide constructive feedback

Make necessary changes to the website based on feedback

Graphic design

Add, adjust and fill shapes

Group shapes to improve accuracy and speed

Add and customise gradient effects

Adjust transparency/opacity for a purpose

Use a colour picker correctly

Accurately rotate shapes

Year 5

App design

Adjust slide size to mimic a phone/tablet size

Add text and images to a slide

Add icons and text to use as navigation

Duplicate slides to create multiple pages of the app

Create hyperlinks to create navigation

e-book creation

Add page colour and style then position and format text.

Add and position images from camera/internet

Add audio, including it behind an object.

Add hyperlinks to text and images

Add format shapes

Use hyperlinks for navigation

Data handling

Select and use non-adjacent cells plus resize multiple cell widths and copy/paste cells

Use formulae to find totals, averages and maximum/minimum numbers

Select the correct chart type to present data

Answer ‘what if?...’ questions

Music creation

Layer tracks using sounds and affects

Create effective instrument tracks.

Edit tracks and effectively adject volume and add effects

Build a song using live loops

Typing

Increase speed and accuracy of touch typing

Computing progression of skills and knowledge

Computer Science (programming)

Year 1

Introduction to programming (including BeeBots)

Understand sequence and algorithms

Sequence instructions (commands) to achieve an objective

Predict, write, execute and debug simple program

Year 4

Programming in Scratch

Use sequence, selection and repetition in programs

Work with variables and various forms of input and output

Debug programs that accomplish goals

Work with variables and conditions

Year 2

Develop programming

Create and debug simple programs

Use logical reasoning to predict the behaviour of simple programs

Simplify a program by using a loop

Programming with Scratch Jr

Program movements

Program outputs for audio or text

Find errors in a program (debug)

Program input (touch or clicking)

Program conditions (if statements)

Year 3

Programming in Scratch

Design, write and debug programs that accomplish specific goals (including outputs)

Use repetition in programs

Work with various forms of input; keyboard, mouse and touch screen

Write programs to simulate physical systems.

Programming in Kodu

Create 3D place using various design tools

Write a program to control using keyboard inputs

Write program with conditions

Write a program with variables

Year 6

Programming in Scratch

Program inputs, conditions, random variables for unpredictability, game timer

Program inputs, conditions, sensing, random variables, operators for direction and data variables for scoring

Use inputs, conditions, loops, sensing, costume changes and broadcasts.

Binary code

Understand why computers/electronics use binary

To convert binary code to denary numbers (decimal numbers) and vice versa

Programming in Python

Program movement using python turtle

Use the PRINT command for text

Program a simple calculator in Python

Program loops to repeat text

Program interactive inputs.

HTML

Add and align text and change colour

Program background colour

Add and align images

Add hyperlinks and use them effectively to build navigation between different pages and external sites

Add an iframe (such as google map) and adjust the height and width

Year 5

Programming in scratch

Program list variables that chooses randomly

Program inputs, conditions and sensing for interaction, data variables for scoring and a game timer

Program inputs, outputs, loops, conditions, sensing and variables

Programming with Sphero

Understand Bluetooth technology as input device

Write programs for the Sphero using movement and repetition (loops)

Write a program to trace a maze/route with Sphero and de-bug

Write a program with outputs

Write a program with random variables

Text-based programming

Change the variables of text-based commands

Write text-based commands accurately

Write text-based commands to program digital art

Physical devices

Understand that computers use physical input and output and give examples

Program physical and output (e.g. Program LED lights)

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems

Year 2

Recognise uses of IT

Understand what makes a computer a computer

Spot digital technology in school

Understand how different technology helps us

Self-image and identity

* I can explain how other people may look and act differently online and offline.
* I can give examples of issues online that might make someone feel sad, worried, uncomfortable or frightened; I can give examples of how they might get help

Online relationships

* I can give examples of how someone might use technology to communicate with others they don’t also know offline and explain why this might be risky. (e.g. email, online gaming, a pen-pal in another school / country).
* I can explain who I should ask before sharing things about myself or others online.
* I can describe different ways to ask for, give, or deny my permission online and can identify who can help me if I am not sure.
* I can explain why I have a right to say ‘no’ or ‘I will have to ask someone’. I can explain who can help me if I feel under pressure to agree to something I am unsure about or don’t want to do.
* I can identify who can help me if something happens online without my consent.
* I can explain how it may make others feel if I do not ask their permission or ignore their answers before sharing something about them online.
* I can explain why I should always ask a trusted adult before clicking ‘yes’, ‘agree’ or ‘accept’ online.

Online reputation

* I can explain how information put online about someone can last for a long time.
* I can describe how anyone’s online information could be seen by others.
* I know who to talk to if something has been put online without consent or if it is incorrect.

Online bullying

* I can explain what bullying is, how people may bully others and how bullying can make someone feel.
* I can explain why anyone who experiences bullying is not to blame.
* I can talk about how anyone experiencing bullying can get help.

Managing online information

* I can use simple keywords in search engines.
* I can demonstrate how to navigate a simple webpage to get to information I need (e.g. home, forward, back buttons; links, tabs and sections).
* I can explain what voice activated searching is and how it might be used, and know it is not a real person (e.g. Alexa, Google Now, Siri).
* I can explain the difference between things that are imaginary, ‘made up’ or ‘make believe’ and things that are ‘true’ or ‘real’.
* I can explain why some information I find online may not be real or true.

Health, well-being and lifestyle

* I can explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment.
* I can say how those rules / guides can help anyone accessing online technologies.

Privacy and security

* I can explain how passwords can be used to protect information, accounts and devices.
* I can explain and give examples of what is meant by ‘private’ and ‘keeping things private’.
* I can describe and explain some rules for keeping personal information private (e.g. creating and protecting passwords).
* I can explain how some people may have devices in their homes connected to the internet and give examples (e.g. lights, fridges, toys, televisions).

Copyright and ownership

* I can recognise that content on the internet may belong to other people.
* I can describe why other people’s work belongs to them.

Year 1

Self-image and identity

* I can recognise that there may be people online who could make someone feel sad, embarrassed or upset.
* If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help

Online relationships

* I can give examples of when I should ask permission to do something online and explain why this is important.
* I can use the internet with adult support to communicate with people I know (e.g. video call apps or services).
* I can explain why it is important to be considerate and kind to people online and to respect their choices.
* I can explain why things one person finds funny or sad online may not always be seen in the same way by others.

Online reputation

* I can recognise that information can stay online and could be copied.
* I can describe what information I should not put online without asking a trusted adult first.

Online bullying

* I can describe how to behave online in ways that do not upset others and can give examples.

Managing online information

* I can give simple examples of how to find information using digital technologies, e.g. search engines, voice activated searching).
* I know / understand that we can encounter a range of things online including things we like and don’t like as well as things which are real or make believe / a joke.
* I know how to get help from a trusted adult if we see content that makes us feel sad, uncomfortable worried or frightened.

Health, well-being and lifestyle

* I can explain rules to keep myself safe when using technology both in and beyond the home.

Privacy and security

* I can explain that passwords are used to protect information, accounts and devices.
* I can recognise more detailed examples of information that is personal to someone (e.g where someone lives and goes to school, family names).
* I can explain why it is important to always ask a trusted adult before sharing any personal information online, belonging to myself or others.

Copyright and ownership

* I can explain why work I create using technology belongs to me.
* I can say why it belongs to me (e.g. ‘I designed it’ or ‘I filmed it’’).
* I can save my work under a suitable title / name so that others know it belongs to me (e.g. filename, name on content).
* I understand that work created by others does not belong to me even if I save a copy.

Computing progression of skills and knowledge

Digital Literacy (Online safety and understanding computer systems)

Year 3

Self-image and identity

* I can explain what is meant by theterm ‘identity’
* I can explain how people can represent themselves in different ways online
* I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why.

Online relationships

* I can describe ways people who have similar likes and interests can get together online.
* I can explain what it means to ‘know someone’ online and why this might be different from knowing someone offline.
* I can explain what is meant by ‘trusting someone online’, why this is different from ‘liking someone online’, and why it is important to be careful about who to trust online including what information and content they are trusted with.
* I can explain why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried.
* I can explain how someone’s feelings can be hurt by what is said or written online.
* I can explain the importance of giving and gaining permission before sharing things online; how the principles of sharing online is the same as sharing offline e.g. sharing images and videos.

Online reputation

* I can explain how to search for information about others online.
* I can give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal.
* I can explain who someone can ask if they are unsure about putting something online.

Online bullying

* I can describe appropriate ways to behave towards other people online and why this is important.
* I can give examples of how bullying behaviour could appear online and how someone can get support.

Managing online information

* I can demonstrate how to use key phrases in search engines to gather accurate information online.
* I can explain what autocomplete is and how to choose the best suggestion.
* I can explain how the internet can be used to sell and buy things.
* I can explain the difference between a ‘belief’, an ‘opinion’ and a ‘fact. and can give examples of how and where they might be shared online, e.g. in videos, memes, posts, news stories etc.
* I can explain that not all opinions shared may be accepted as true or fair by others (e.g. monsters under the bed).
* I can describe and demonstrate how we can get help from a trusted adult if we see content that makes us feel sad, uncomfortable worried or frightened.

Health, well-being and lifestyle

* I can explain why spending too much time using technology can sometimes have a negative impact on anyone, e.g. mood, sleep, body, relationships; I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaged (e.g. doing homework, games, films, videos).
* I can explain why some online activities have age restrictions, why it is important to follow them and know who I can talk to if others pressure me to watch or do something online that makes me feel uncomfortable (e.g. age restricted gaming or web sites).

Privacy and security

* I can describe simple strategies for creating and keeping passwords private.
* I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult.
* I can describe how connected devices can collect and share anyone’s information with others.

Copyright and ownership

* I can explain why copying someone else’s work from the internet without permission isn’t fair and can explain what problems this might cause.

Year 4

Self-image and identity

* I can explain how my online identity can be different to my offline identity.
* I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them.
* I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this.

Online relationships

* I can describe strategies for safe and fun experiences in a range of online social environments (e.g. livestreaming, gaming platforms).
* I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours.
* I can explain how content shared online may feel unimportant to one person but may be important to other people’s thoughts feelings and beliefs.

Online reputation

* I can describe how to find out information about others by searching online.
* I can explain ways that some of the information about anyone online could have been created, copied or shared by others.

Online bullying

* I can recognise when someone is upset, hurt or angry online.
* I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat).
* I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation).

Managing online information

* I can analyse information to make a judgement about probable accuracy and I understand why it is important to make my own decisions regarding content and that my decisions are respected by others.
* I can describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy (e.g. social media, image sites, video sites).
* I can describe some of the methods used to encourage people to buy things online (e.g. advertising offers; in-app purchases, pop-ups) and can recognise some of these when they appear online.
* I can explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true.
* I can explain that technology can be designed to act like or impersonate living things (e.g. bots) and describe what the benefits and the risks might be.
* I can explain what is meant by fake news e.g. why some people will create stories or alter photographs and put them online to pretend something is true when it isn’t.

Health, well-being and lifestyle

* I can explain how using technology can be a distraction from other things, in both a positive and negative way.
* I can identify times or situations when someone may need to limit the amount of time they use technology e.g. I can suggest strategies to help with limiting this time.

Privacy and security

* I can describe strategies for keeping personal information private, depending on context.
* I can explain that internet use is never fully private and is monitored, e.g. adult supervision.
* I can describe how some online services may seek consent to store information about me; I know how to respond appropriately and who I can ask if I am not sure.
* I know what the digital age of consent is and the impact this has on online services asking for consent.

Copyright and ownership

* When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it.
* I can give some simple examples of content which I must not use without permission from the owner, e.g. videos, music, images.

Year 5

Computer networks and the internet

Why do we save our work to a server on a network, not just to one computer?

Why do we need to login to a school network?

What is Bluetooth?

Self-image and identity

* I can explain how identity online can be copied, modified or altered.
* I can demonstrate how to make responsible choices about having an online identity, depending on context.

Online relationships

* I can give examples of technology specific forms of communication (e.g. emojis, memes and GIFs).
* I can explain that there are some people I communicate with online who may want to do me or my friends harm. I can recognise that this is not my / our fault.
* I can describe some of the ways people may be involved in online communities and describe how they might collaborate constructively with others and make positive contributions. (e.g. gaming communities or social media groups).
* I can explain how someone can get help if they are having problems and identify when to tell a trusted adult.
* I can demonstrate how to support others (including those who are having difficulties) online.

Online reputation

* I can search for information about an individual online and summarise the information found.
* I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect.

Online bullying

* I can recognise online bullying can be different to bullying in the physical world and can describe some of those differences.
* I can describe how what one person perceives as playful joking and teasing (including ‘banter’) might be experienced by others as bullying.
* I can explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult.
* I can identify a range of ways to report concerns and access support both in school and at home about online bullying.
* I can explain how to block abusive users.
* I can describe the helpline services which can help people experiencing bullying, and how to access them (e.g. Childline or The Mix).

Managing online information

* I can explain the benefits and limitations of using different types of search technologies e.g. voice-activation search engine. I can explain how some technology can limit the information I aim presented with e.g. voice-activated searching giving one result.
* I can explain what is meant by ‘being sceptical’;
* I can give examples of when and why it is important to be ‘sceptical’. I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results.
* I can explain key concepts including: information, reviews, fact, opinion, belief, validity, reliability and evidence.
* I can identify ways the internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads.
* I can describe ways of identifying when online content has been commercially sponsored or boosted, (e.g. by commercial companies or by vloggers, content creators, influencers).
* I can explain what is meant by the term ‘stereotype’, how ‘stereotypes’ are amplified and reinforced online, and why accepting ‘stereotypes’ may influence how people think about others.
* I can describe how fake news may affect someone’s emotions and behaviour, and explain why this may be harmful.
* I can explain what is meant by a ‘hoax’. I can explain why someone would need to think carefully before they share.

Health, well-being and lifestyle

* I can describe ways technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively.
* I can describe some strategies, tips or advice to promote health and wellbeing with regards to technology.
* I recognise the benefits and risks of accessing information about health and well-being online and how we should balance this with talking to trusted adults and professionals.
* I can explain how and why some apps and games may request or take payment for additional content (e.g. in-app purchases, lootboxes) and explain the importance of seeking permission from a trusted adult before purchasing.

Privacy and security

* I can explain what a strong password is and demonstrate how to create one.
* I can explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others.
* I can explain what app permissions are and can give some examples.

Copyright and ownership

* I can assess and justify when it is acceptable to use the work of others.
* I can give examples of content that is permitted to be reused and know how this content can be found online.

Year 6

Self-image and identity

* I 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.
* I can describe issues online that could make anyone feel sad, worried, uncomfortable or frightened. I know and can give examples of how to get help, both on and offline.
* I can explain the importance of asking until I get the help needed.

Online relationships

* I can explain how sharing something online may have an impact either positively or negatively.
* I can describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not.
* I can describe how things shared privately online can have unintended consequences for others. e.g. screen-grabs.
* I can explain that taking or sharing inappropriate images of someone (e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this.

Online reputation

* I can explain the ways in which anyone can develop a positive online reputation.
* I can explain strategies anyone can use to protect their ‘digital personality’ and online reputation, including degrees of anonymity.

Online bullying

* I can describe how to capture bullying content as evidence (e.g screen-grab, URL, profile) to share with others who can help me.
* I can explain how someone would report online bullying in different contexts.

Managing online information

* I can explain how search engines work and how results are selected and ranked.
* I can explain how to use search technologies effectively.
* I can describe how some online information can be opinion and can offer examples.
* I can explain how and why some people may present ‘opinions’ as ‘facts’; why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal.
* I can define the terms ‘influence’, ‘manipulation’ and ‘persuasion’ and explain how someone might encounter these online (e.g. advertising and ‘ad targeting’ and targeting for fake news).
* I understand the concept of persuasive design and how it can be used to influences peoples’ choices.
* I can demonstrate how to analyse and evaluate the validity of ‘facts’ and information and I can explain why using these strategies are important.
* I can explain how companies and news providers target people with online news stories they are more likely to engage with and how to recognise this.
* I can describe the difference between online misinformation and dis-information.
* I can explain why information that is on a large number of sites may still be inaccurate or untrue. I can assess how this might happen (e.g. the sharing of misinformation or disinformation).
* I can identify, flag and report inappropriate content.

Health, well-being and lifestyle

* I can describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose.
* I recognise and can discuss the pressures that technology can place on someone and how / when they could manage this.
* I can recognise features of persuasive design and how they are used to keep users engaged (current and future use).
* I can assess and action different strategies to limit the impact of technology on health (e.g. night-shift mode, regular breaks, correct posture, sleep, diet and exercise).

Privacy and security

* I can describe effective ways people can manage passwords (e.g. storing them securely or saving them in the browser).
* I can explain what to do if a password is shared, lost or stolen.
* I can describe how and why people should keep their software and apps up to date, e.g. auto updates.
* I can describe simple ways to increase privacy on apps and services that provide privacy settings.
* I can describe ways in which some online content targets people to gain money or information illegally; I can describe strategies to help me identify such content (e.g. scams, phishing).
* I know that online services have terms and conditions that govern their use.

Copyright and ownership

* I can demonstrate the use of search tools to find and access online content which can be reused by others.
* I can demonstrate how to make references to and acknowledge sources I have used from the internet.