Sheffield Primary Computing Progression Framework

Sheffield City Council

Sheffield ILS eLearning Service

Improving outcomes . Embracing technology

The statements are loosely based on two documents, with additional elements relating directly to the content of the Sheffield Scheme of Work:

- The Revised P Scales for Computing by Elliott, Galloway, Medhurst & Paveley – an attempt by educators across the country to create a set of P Scales statements that better reflect the Computing programs of study. This is reflected in the Foundation statements.

- The Computing Progression Pathways document by Mark Dorling & Matthew Walker © 2014, showing progress for pupils working at KS1 and above.

Foundation (NB above and beyond Early Learning Goals – can be used to assess pupils working below age expectations in KS1)

What is a Computer? Key Skills

- Use different digital devices.
- Recognise that you can access content on a digital device.
- Use a mouse, touchscreen or appropriate access device to target and select options on screen.
- Recognise a selection of digital devices.
- Recognise the basic parts of a computer, e.g. mouse, screen, keyboard.
- Select a digital device to fulfil a specific task, e.g. to take a photo.

Presenting Information & Multimedia

- Use technology to explore and access digital content.
- Operate a digital device with support to fulfil a task.
- Create simple digital content, e.g. digital art.
- Choose media to convey information, e.g. image for a poster.

Data

- Access content in a range of formats, e.g. image, video, audio.
- Answer basic questions about information displayed in images e.g. more or less.

Programming & Algorithms

- Explore technology.
- Repeat an action with technology to trigger a specific outcome.
- Recognise the success or failure of an action.
- Follow simple instructions to control a digital device.
- Recognise that we control computers.
- Input a short sequence of instructions to control a device.

Digital Literacy

- Are aware that some online content is inappropriate.
- Are aware that information can be public or private.
- Know to tell an appropriate adult if they see something on the computer that upsets them.

Year 1

What is a Computer? Key Skills

- Recognise a range of digital devices.
- Select a digital device to fulfil a specific task, e.g. to take a photo.
- Name a range of digital devices, e.g. laptop, phone, games console.
- Log on to the school computer / unlock the school tablet with support.
- Identify the basic parts of a computer, e.g. mouse, keyboard, screen.
- Use a suitable access device (mouse, keyboard, touchscreen, switch) to access and control an activity on a computer.
- Open key applications independently.
- Save and open files with support.
- Add an image to a document from a given folder/source with support.

Presenting Information & Multimedia

- Create digital content, e.g. digital art.
- Choose media from a selection (e.g. images, video, sound) to present information on a topic.
- Recognise that you can find out information from a website.
- Recognise that you can edit digital content to change its appearance.
- Select basic tools/options to change the appearance of digital content, e.g. filter on an image / font / size of paintbrush.
- Combine media with support to present information, e.g. text and images.

Data

- Recognise different forms of digital content, i.e. text, image, video and audio.
- Collect simple data (e.g. likes/dislikes) on a topic.
- Present simple data using images, e.g. number of animals.
- Recognise charts and pictograms and why we use them.
- Explain information shown in a simple chart or pictogram.
- Modify simple charts/pictograms, e.g. add title, item or labels.
- Identify the key features of a chart or pictogram.
- Collect data on a topic (eye colour, pets etc.) and present in a pictogram or chart.

Programming & Algorithms

- Recognise that computers don't have a brain.
- Explain that we control computers by giving them instructions.
- Create a simple program e.g. to control a floor robot.
- Create a simple algorithm.
- Predict the outcome of a simple algorithm or program.
- Explain what an algorithm is – a sequence of instructions to make something happen.
- Recognise that the order of instructions in an algorithm is important.
- Debug an error in a simple algorithm or program e.g. for a floor robot.

Digital Literacy

- Use a simple password when logging on, where relevant.
- Explain why we use passwords.
- Recognise examples of personal information e.g. name, image.
- Know who to tell if concerned about content or contact online.
- Recognise that digital content belongs to the person who created it.
- Talk about their use of technology at home.

Year 2

What is a Computer? Key Skills

- Recognise what a computer is (input > process > output).
- Recognise that a range of digital devices contain computers, e.g. phone, games console, smart speaker.
- Explain what the basic parts of a computer are used for.
- Identify and use input devices, e.g. mouse, keyboard; and output devices, e.g. speakers, screen.
- Open key applications independently.
- Save and open files to/from a given folder.
- Add an image to a document from a given folder/source.
- Resize an image in a document.
- Highlight text and use arrow keys.
- Capture media independently (e.g. take photos, record audio).

Presenting Information & Multimedia

- Create simple digital content for a purpose, e.g. digital art.
- Recognise that we can use technology to record and playback audio or take and view photographs.
- Apply edits to digital content to achieve a particular effect, e.g. emphasise part of a text.
- Present ideas and information by combining media, e.g. text and images.
- Explain that you can search for information on the internet.
- Plan out digital content, e.g. a simple sketch or storyboard.
- Identify the common features of digital content, e.g. title, images.
- Recognise that we can use different types of media to convey information, e.g. text, image, audio, video.

Data

- Identify different forms of digital content, i.e. text, image, video and audio.
- Recognise charts, pictograms and branching databases, and why we use them.
- Identify an object using a branching database
- Recognise an error in a branching database.
- Create a branching database using pre-prepared images and questions
- Identify the features of a good question in a branching database.
- Independently plan out and create a branching database.
- Evaluate a given branching database and suggest improvements.

Programming & Algorithms

- Explain that computers have no intelligence and we have to program them to do things.
- Create a program with multiple steps e.g. to control a floor robot.
- Predict the outcome of an algorithm or program with multiple steps.
- Recognise that the instructions in an algorithm need to be clear and unambiguous.
- Identify and correct errors in a given algorithm or program, and recognise the term debugging.
- Explain what an algorithm is, and that when inputted on a computer it is called a program.
- Plan out a program by creating an algorithm, and evaluate its success.

Digital Literacy

- Remember a simple password to log onto the computer or a website.
- Identify rules for acceptable use of technology in school.
- Recognise what personal information is and the need to keep it private.
- Recognise that spending a lot of time in front of a screen can be unhealthy.
- Recognise that some information found online may not be true.

Year 3

What is a Computer? Key Skills

- Describe what a computer is (input > process > output).
- Explain the difference between input and output devices on a computer.
- Know where to save and open files (e.g. in shared folder).
- Save files with appropriate names.
- Use a keyboard effectively to type in text.
- Use left-, right- and double-click on the mouse.
- Add an image to a document from the internet.
- Resize and move an image in a document.
- Use a search engine to find simple information.
- Recognise that school computers are connected.

Presenting Information & Multimedia

- Present ideas and information by combining media independently, e.g. text and images.
- Design and create simple digital content for a purpose/audience, e.g. poster.
- Edit digital content to improve it, e.g. resize text.
- Identify the features of a good piece of digital content.
- Explain why we use technology to create digital content.
- Recognise why we use different types of media to convey information, e.g. text, image, audio, video.

Data

- Recognise charts, pictograms and databases, and why we use them.
- Present information using a suitable chart
- Explore a record card database to find out information.
- Use filters in a database to find out specific information.
- Name the key parts of a database, e.g. record, field, search.
- Answer questions about information in a database.
- Name some benefits of using a computer to create charts and databases.
- Recognise that search engines store information in databases.

Programming & Algorithms

- Predict the outcome of a block or text-based program (Scratch/Logo).
- Successfully modify an existing program, e.g. change background, number of times things happen.
- Identify repeated steps in a program or algorithm.
- Create examples of algorithms containing count-controlled loops.
- Use a count-controlled loop (e.g. repeat 3 times) to make a program more efficient.
- Recognise that we can create an algorithm to help plan out a program.
- Recognise a forever loop in a program or algorithm.
- Use a forever loop in a program to keep something happening.
- Identify errors in a block or text-based program and correct them.
- Recognise that different inputs can be used to control a program.

Digital Literacy

- Explain why we need to keep our password safe.
- Recognise that digital content belongs to the person who first created it, but we can give permission for others to use it.
- Recognise when to share personal information and when not to.
- Recognise that some people lie about who they are online.
- Are aware that games and films have age ratings.

Year 4

What is a Computer? Key Skills

- Recognise that you can organise files using folders.
- Explain what a good file name would look like.
- Delete and move files.
- Use key parts of a keyboard effectively, e.g. shift, arrow keys, delete).
- Know how to copy and paste text or images in a document.
- Crop an image and apply simple filters.
- Use a search engine to find specific information.
- Recognise that school computers are connected together on a network.

Presenting Information & Multimedia

- Collect, organise and present information using a range of media.
- Design and create digital content for a specific purpose, e.g. poster, animation.
- Edit digital content to improve it according to feedback.
- Identify the features of a good piece of digital content and apply these in own design.
- Explain the benefits of using technology to present information.
- Know where to find copyright-free content, e.g. creative commons images.
- Collaborate with peers using online tools, e.g. blogs, Google Drive, Office 365, if available.

Data

- Draw conclusions from information stored in a database, chart or table.
- Design a questionnaire and collect a range of data on a theme.
- Choose appropriate formats to present data to convey information.
- Recognise that school computers are connected together on a network.
- Recognise that the Internet is made up of computers and other digital devices connected together all around the world.
- Know that you use a web browser to access information stored on the internet.
- Appreciate that you need to use specific software to work with video, images, audio etc.

Programming & Algorithms

- Create a program using a range of events/inputs to control what happens.
- Recognise that we can decompose a problem into smaller parts to help solve it.
- Explain when to use forever loops and count-controlled loops, and use them in programs.
- Recognise selection in a program or algorithm.
- Use selection in algorithms in programs to alter what happens when a condition changes, e.g. *if...then...*
- Design a program for a purpose. Decompose into parts and create an algorithm for each one.
- Recognise common mistakes in programs and how to correct them.

Digital Literacy

- Remember and use an individual password.
- Recognise what kinds of websites are trustworthy sources of information.
- Recognise the benefits and risks of different apps and websites.
- Recognise that the media can portray groups of people differently.
- Can rate a game or film they have made and explain their rating.

Year 5

What is a Computer? Key Skills

- Type using fingers on both hands.
- Use common keyboard shortcuts, e.g. ctrl C (copy), ctrl V (paste).
- Explain what makes a strong password.
- Use folders to organise files.
- Know how to mute and unmute audio on a computer or tablet.
- Recognise that there is more than one search engine, and they may produce different results.
- Use a search engine effectively to find information and images.
- Know how to search for an application on a computer/tablet.

Presenting Information & Multimedia

- Identify and use appropriate hardware and software to fulfil a specific task.
- Remix and edit a range of existing and their own media to create content.
- Consider the audience when designing and creating digital content.
- Recognise the benefits of using technology to collaborate with others
- Identify success criteria for creating digital content for a given purpose and audience.
- Evaluate their own content against success criteria and make improvements accordingly.

Data

- Explain the difference between data and information.
- Appreciate that different programs work with different types of data, e.g. text, number, video.
- Explain the difference between the Internet and the World Wide Web.
- Know the difference between a search engine and a web browser.
- Explain the basics of how search engines work, and that different search engines may give different results.
- Perform complex searches for information using advanced settings in search engines.
- Recognise the benefits and risks of sharing data online.

Programming & Algorithms

- Name a range of sensors in physical systems.
- Recognise that different solutions may exist for the same problem.
- Predict what will happen in a program or algorithm when the input changes (e.g. sensor, data or event).
- Use two-way selection in programs and algorithms, i.e. *if...then...else...*
- Recognise variables in a program and what they do.
- Create programs including *repeat until* loops.
- Create and use simple variables, e.g. to keep score.
- Evaluate a program and make improvements to the code or design accordingly.
- Create an algorithm for a physical system containing a sensor.

Digital Literacy

- Know where to find copyright free images and audio, and why this is important.
- Critically evaluate websites for reliability of information and authenticity.
- Demonstrate responsible use of a online services, and know a range of ways to report concerns.

Year 6

What is a Computer? Key Skills

- Type efficiently using both hands.
- Use a range of keyboard shortcuts.
- Recognise that different devices may have different operating systems.
- Organise files effectively using folders and files names.
- Use the advanced search tools when using a search engine to find specific information and images.
- Explain the basic function of an operating system.
- Recognise common file types and extensions e.g. jpeg, png, doc, wav
- Recognise a range of Internet services, e.g. email, VOIP (e.g. Skype, FaceTime), World Wide Web, and what they do.

Presenting Information & Multimedia

- Select, combine and remix a range of media to create original content.
- Consider all steps of the design process when creating content (e.g. identify problem, plan, create, evaluate, share.)
- Identify the most effective tools to present information for a specific purpose.
- Explain the benefits of using technology to collaborate with others.
- Evaluate existing digital content in terms of effectiveness and design.

Data

- Recognise what a spreadsheet is and what it is used for.
- Explain the difference between physical, mobile and wireless networks.
- Use simple formulae in a spreadsheet to find out information from a set of data.
- Collect data for a purpose and plan out a spreadsheet to present it effectively, using relevant formulae.
- Produce graphs from data in a spreadsheet to answer a question.
- Analyse and evaluate data and information in a spreadsheet, chart or database.
- Recognise that poor quality data leads to unreliable results.

Programming & Algorithms

- Design and program a physical computing system that uses sensors.
- Recognise and use procedures (sub-routines) in programs.
- Plan out a program in detail, including task, algorithm, code and execution level.
- Explain common errors in programs and how to fix them.
- Use nested selection statements in a program or algorithm effectively.
- Combine a variable with relational operators (< = >) to determine when a program changes, e.g. *if score > 5, say "well done".*
- Recognise key concepts (sequence, selection, repetition and variables) in a range of languages and contexts.

Digital Literacy

- Explain what makes a strong password and why this is important at school and in the wider world.
- Explain how algorithms are used to track online activities with a view to targeting advertising and information.
- Know that there are laws around the purchase of games; the production, sending and storage of images; what is written online; and around online gambling.