

Digital Literacy

Definition:
To be digitally literate is to be able to engage the connections and communications possibilities of digital technologies, in their capacity to generate, remix, repurpose, and share new knowledge as well as simply deliver existing information.

Core Open Resource:
Common Sense Media

National Curriculum

Key Stage 2

- 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
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

	Year 3	Year 4	Year 5	Year 6
Online Safety	<p>To know how to respond to unpleasant communications</p> <p>To understand the need to keep personal information private and am responsible in my online presence</p> <p>To know the difference between personal, private and public online spaces and the risks associated with these</p> <p>To know that some videogames and online services are not appropriate for my age</p>	<p>To understand some of the risk and rewards involved in publishing online and know how to keep safe</p> <p>To recognise the effect that writing or images may have on others and to respect the ideas and communications of others/ they encounter online</p> <p>To know that need to have appropriate permission for use of images of friends or those they have found online</p>	<p>To identify and ignore/cancel unwanted advertising and malicious downloads in the form of, popups, video, banners, hyperlinked objects</p> <p>To discuss the differences between an open blog and a forum for a closed community</p>	<p>To describe possible impact of published content to an audience e.g. the use of advertising Know the meaning of some common website extensions –such as .org, .net, ac, .gov, .co.uk, .fr, .com</p> <p>To know that https is used for secure transaction such as on-line banking and identified with a padlock</p>
Online Literacy	<p>To use an age appropriate search engine independently</p> <p>To explore and discuss the benefits of a range of online communication tools</p> <p>To create and use a basic email service</p> <p>To understand that there are rules about using public spaces online</p>	<p>To use an internet search to answer questions on a topic and know there are different search engines available</p> <p>To use different search engines and their features, e.g. Google Image Search, video, sound etc.</p> <p>CONSIDER INCLUDING:</p> <p>To understand the benefits of online collaboration tools for the creation of documents</p> <p>To use online collaboration tools effectively</p>	<p>To use the internet as a tool for research</p> <p>To choose the most appropriate search engine for the task, refining as necessary</p> <p>CONSIDER PROGRESSION FOR:</p> <p>online collaboration</p>	<p>To decide which online communication tool to use to best suit the purpose</p> <p>To explain how search engines work; finding and ranking pages in order</p> <p>CONSIDER PROGRESSION FOR:</p> <p>online collaboration</p>
Copyright	<p>To understand plagiarism when using copy/paste from a webpage</p>	<p>To understand copyright issues – which images / videos / sounds are legal and safe to use.</p>	<p>To identify whether a file has copyright or can be legally downloaded and whether these can be used in their own work</p> <p>To understand that you should not publish other peoples' material without their permission</p>	<p>To select copyright free images and sounds from sources such as LGFL audio network and google searches</p>
Quality of Information	<p>To know the difference between fact, fiction and opinion online</p>	<p>To know that web sites are not always accurate, and that information should be checked before it is used</p>	<p>To recognise reasons that people might publish inaccurate content and check validity.</p>	<p>To use range of sources to check validity and recognise different viewpoints.</p>
Computers & Computer Networks	<p>CONSIDER PROGRESSION FOR:</p> <p>Understand computers and computer networks</p> <p><i>Informed by Islington Skills Booklet</i></p>	<p>CONSIDER PROGRESSION FOR:</p> <p>Understand computers and computer networks</p> <p><i>Informed by Islington Skills Booklet</i></p>	<p>To explain in simple terms the differences between a network, the internet and the world wide web</p> <p>CONSIDER PROGRESSION FOR:</p> <p>Understand computers and computer networks</p> <p><i>Informed by Islington Skills Booklet</i></p>	<p>To explain the differences between a network, the internet and the world wide web</p> <p>To know that computers use IP addresses to identify each other</p> <p>To use specific vocabulary: server, digital data, binary code, URL</p> <p><i>Informed by Islington Skills Booklet</i></p>

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from original document by M Boylan (@ictlinks) November 2019, supported by information from Jane Waite & CAS

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Information Technology

Technology Enhanced Learning:

At all Key Stages, information and communication technology should be used to **enhance teaching and learning right across the curriculum**: this is often called Technology Enhanced Learning (TEL). When there is a clear focus on learning rather than technology.

Naace/CAS joint guidance, 2013

Discrete introductions to tools should be provided in the first instance, to ensure best use.

National Curriculum

All Pupils from Year 3

Pupils have **opportunities across the curriculum to select, use and combine a variety of software** (including internet services) **on a range of digital devices** including iPads and laptops **to design and create a range content that accomplish given goals, including collecting and presenting data and information.**

Year 4	Year 5	Year 6
In addition, given goals for Year 4 will include opportunities for analysing data and information.	In addition, given goals for Year 5 will include opportunities for evaluating data and information.	Given goals for Year 6 will provide opportunities to apply above skills across the curriculum.

	Year 3	Year 4	Year 5	Year 6
Storing, Retrieving & Presenting Information	To use numerous design features such as text boxes, borders and WordArt in different layouts and styles To use a variety of presentation software to make a sequence of slides	To save and retrieve documents from shared areas using sensible names	CONSIDER PROGRESSION FOR: Selecting and combining software Using a wider range of software	
Digital Images: Still & Video	To create and manipulate digital artwork To use reasoning about the quality and composition of images To perform basic editing on images / video – crop, recolour, resize	CONSIDER PROGRESSION FOR: Editing & manipulation of drawn images, digital photos, video & animation	CONSIDER PROGRESSION FOR: Editing & manipulation of drawn images, digital photos, video & animation	CONSIDER PROGRESSION FOR: Editing & manipulation of drawn images, digital photos, video & animation
Digital Audio	To create and insert music and sounds into presentations and documents	CONSIDER PROGRESSION FOR: Editing digital audio	CONSIDER PROGRESSION FOR: Editing digital audio	CONSIDER PROGRESSION FOR: Editing digital audio
Data	To use a data logger to capture measurements over time Databases: To add to, sort and search a database (including branching) To interrogate a simple database to answer questions and create charts from the data Spreadsheets: To use spreadsheet cell references To format cells and text appropriately	To use data loggers to capture information to use over time Databases: To add information and use the 'field' function within a database To sort record cards by using field names and use a database to find the answer to simple questions To use the search tool find information and search for answers to simple questions. To use a branching database to identify objects and add additional objects to an existing branching database Spreadsheets: To create simple bar charts and use them to answer questions To select colour, cell size and text appropriately	To investigate changes in sound / light/temperature levels using data logging, using continuous logging, snapshot functions and logging over time Databases: To use 'AND', 'OR', '<=' and '>=' to search a database To design questions to search a large database To check for accuracy by checking data, using different views, search tools and graphing To build and use databases to support my work Spreadsheets: To enter formulae into a spreadsheet and modify the data, (simple calculations + - / x total) To make predictions and changes and check results. To use 'SUM' to calculate the total of a set of numbers in a range of cells To create graphs and charts from data in a spreadsheet To change data in a spreadsheet to answer 'what if...?' questions and check predictions	To identify opportunities to use data logging to support my work To use data logging devices to investigate changes in the environment over time To use graphical information to answer questions and solve simple problems Databases: To use databases and branching databases to process, interpret, store, and present information for a specific audience, realising the need for accuracy and checking plausibility Spreadsheets: To copy cells and formulae using copy & paste, and fill across and down To display and interpret data selecting bar charts, pie charts, scatter graphs and line graphs appropriately To match the information in a spreadsheet to the needs of the audience and present data, with appropriate ranges, labelling axes and title To create and amend a spreadsheet to solve a problem through a review of the rules and variables
	<i>Informed by Islington Skills Booklet</i>	<i>Informed by Islington Skills Booklet</i>	<i>Informed by Islington Skills Booklet</i>	<i>Informed by Islington Skills Booklet</i>

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Computer Science

National Curriculum

- 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

Definition:

Computer science & computational thinking allows us to develop skills and techniques to help us solve problems effectively, **with or without** the aid of a computer. **Computational thinking is not thinking like a computer** – computers are not capable of thought. Rather, **it is learning to think in ways which allow us, as humans, to solve problems more effectively** and, when appropriate, use computers to help us do so.

Core Open Resource:

Common Sense Media

Year 3	Year 4	Year 5	Year 6
<p>To plan and enter a sequence of instructions on a robot/sprite to achieve specific outcomes</p> <p>To test and improve/debug programmed sequences</p> <p>To use loops (repeat/forever) to achieve solutions to tasks</p> <p>To use computational thinking to solve open ended problems</p> <p>To talk about algorithms planned by others and identify any problems and the expected outcome</p> <p>To explain how algorithms work, predicting outcomes and debugging</p> <p><i>Informed by Islington Skills Booklet</i></p>	<p>To use broadcast/receive to link sprites and stage</p> <p>To use selection (if else) blocks to give different outcomes.</p> <p>To use an algorithm to sequence and order more complex programming.</p> <p>To create and edit procedures using commands such as pen up, pen down and change direction</p> <p><i>Informed by Islington Skills Booklet</i></p>	<p>To explore/ refine procedures using repeat to achieve solutions to problems</p> <p>To explore instructions to control software or hardware with an input using 'if then' commands</p> <p>To explore a simulation to then control a physical system using inputs and different outputs</p> <p>To identify problems and identify a solution for a program</p> <p>To write down the steps required to achieve the outcome that is wanted and refer to this when programming</p> <p>To predict the outputs for the steps in an algorithm</p> <p>To begin to use the process: plan, program, test and review</p> <p>To write a program which follows an algorithm to solve a problem for a digital device</p> <p>To understand how sensors can be used to measure input to activate a procedure or sequence and talk about applications in society</p> <p>To explain what a variable is and use variables in a program</p> <p>To explain how a score variable is used</p> <p><i>Informed by Islington Skills Booklet</i></p>	<p>To record in some detail the steps that are required to achieve an outcome</p> <p>To use the process: plan, program, test and review a program</p> <p>To write a program which follows an algorithm to solve a problem and achieve a planned outcome</p> <p>To group commands as a procedure to achieve a specific outcome within a program</p> <p>To control on screen mimics and physical devices using one or more input and predict the outputs</p> <p>To decompose a game into its parts</p> <p>To design a game including selection, variables and creating the artwork for the game</p> <p>To evaluate a game</p> <p><i>Informed by Islington Skills Booklet</i></p>

Computational Thinking

- Abstraction
- Logical Thinking
- Algorithmic Thinking
- Pattern Identification
- Decomposition
- Evaluation

Computational Thinking =

Critical thinking



Power of computing

Approaches

Continuum of Scaffolding

Copy Code

Targeted Tasks

Shared Coding

Guided Exploration

Project Design and Code

Tinker

- Imitate
- Innovate
- Invent
- Vs
- Remix

PRIMM:

- Predict
- Run
- Investigate
- Modify
- Make

Levels of Abstraction:

- Task
- Design (including algorithms)
- Code
- Running the Code

Use computational thinking to analyse the problem and design a solution, including creating an algorithm

Implement these ideas in a programming language on a computer: coding

Programming



Sound monitor design.

Sound Monitor

Code Scratch

Microphone to capture information

Algorithm

When volume increases the arrow moves up the scale.

When volume decreases the arrow moves down the scale.

Commands I might need:

set y to ...

go to x... y...

forever

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Core Fundamentals of Programming – Primary Progression

Progression with Sequence

Switch background
- no sprites

Single sprites
- no concurrency &
- no coordination

Multiple sprites
- concurrency &
- no coordination

Multiple sprites
- concurrency
- use time to manage
coordinations

Multiple sprites
- concurrency
- use broadcast to
manage coordinations

Multiple sprites
- concurrency
- use broadcast & wait
to manage
coordinations

Progression with Repetition

```

when clicked
  clear
  pen down
  set pen color to
  go to x: 0 y: 0
  repeat 4
    move 100 steps
    turn 90 degrees
  
```

repeated sequence of steps

Repeat n times

```

when I receive Cat set up for start
  forever
    Make the cat walk ar...
    if on edge, bounce
    switch costume to costume2
    move 10 steps
    wait 1 secs
    switch costume to costume1
    move 10 steps
    wait 1 secs
  
```

Forever

- can be simple or complex
- depends on use
- spiral progression

```

when clicked
  repeat until Lives = 0
    point towards mouse-pointer
    move 10 steps
  stop all
  
```

Repeat until
- requires boolean
- could use input
coordinations

In other programming languages.... for loops / while loop

Progression with Selection

```

if touching Sprite1 ? then
  change Lives by -1
  
```

If then

```

if answer = Correctans then
  say Well done! for 2 secs
  change Score by 1
else
  say That's incorrect! for 2 secs
  say join The correct answer is Correctans for 2 secs
  change Lives by -1
  
```

If then else

```

when clicked
  clear
  pen down
  repeat 72
    repeat 360
      move 1 steps
      turn 1 degrees
    turn 3 degrees
  
```

Nested

```

when clicked
  repeat until Lives = 0
    point towards mouse-pointer
    move 10 steps
  stop all
  
```

Event handling
Forever
Conditional loops

Progression with Variables

Use variable to:
Display a value that
changes during the
program
e.g. score/lives

Use variable to:
Facilitate user to control
an aspect of a program
e.g. difficulty/ speed/
size/colour

Use variable to:
Control internal working
of the program
e.g. difficulty level

Knows what a variable is.
Can predict what variables
will do
Can change code with
variables
Can add a variable....

Progression with own Blocks & Lists

Make your own block for
simple games, for initialisation

Suggests using make your own blocks
to reuse code, make code readable.

Lists for simple random
selection activities

Lists for simple
matching activities

For handling data
- arrays

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M Boylan (@ictlinks) November 2019, with thanks to Jane Waite & CAS, Based on research from Learning Trajectories Derived from Research Literature: Sequence, Repetition, Conditionals, Rich et al 2017

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