

# JERSEY COMPUTING CURRICULUM

## (Published April 2014)

**This curriculum works alongside *Thinking Differently – Vision for IT in Education 2013-2015***

One of the top priorities of the *Thinking Differently* vision is to provide:

*“A new engaging computing curriculum for the 21<sup>st</sup> century with greater emphasis on employable skills that will be in demand in the future, with progression to industry; enthusing girls as well as boys.”*

The strategy also states that this curriculum will focus on the long term success of every learner and provide opportunities to acquire key skills for learning, personal development and employability. The curriculum will:

- *Encourage creative use of technology in learning*
- *Introduce coding and computing in the primary school curriculum*
- *Inspire pupils, girls and boys, to be creative and innovative*
- *Ensure that pupils use technology routinely and discerningly to search for reliable sources of information, collaborate and publish their work*
- *Help pupils to learn to validate reliable sources of information, synthesise information, communicate, collaborate and problem-solve using the opportunities that technology provides*
- *Develop the wider skills required in the workplace such as creativity and business acumen and how to use and apply new knowledge and skills to problem-solving*
- *Educate and empower students to use technology safely and responsibly, both in school and in all aspects of their social lives with particular regard to their future reputations.*

## Jersey Computing Curriculum

This document provides UK statutory guidance from Key Stage 1 to Key Stage 2.

It also provides Jersey schools with a framework for end of Key Stage expectations for the three strands;

**Computer Science**  
**Digital Literacy**  
**IT Skills**

**These are minimum expectations: they do not place a ceiling on children’s achievement.**

**It is expected that experiences from the previous Key Stage will be consolidated as children move into the next Key Stage.**

“This frame work is intended to support flexibility and discretion at the Institutional level; it is not a detailed prescription. Moreover the framework describes the goal we would like to achieve, not the journey for getting there. In practice we need to move in small steps towards these goals, and the route will differ between different providers depending on their respective strengths and priorities.” (*A Curriculum Framework for Computer Science and Information Technology*, Computing at School Working Group, pg 3, March 2012, available at <http://www.computingschool.org.uk> [accessed March 2014].)

This framework was written to focus on skill development rather than specific software, applications or operating systems.

Due to the evolving nature of IT this framework would need to be reviewed at least every two years.

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Colour Codes: Links to the IT Framework and the Key Stage 1 and Key Stage 2 Curriculum Map

	Key Stage 1
	Key Stage 2
	Key Stage 3
	Computing
	Digital Literacy
	IT Skills

**Key Stage 1  
Computer Science UK Statutory Requirement**

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.

**Key Stage 1  
Computer Science Framework  
Generic Skills for Computer Science**

Basic debugging strategies

Essential Skills	Key Stage 1 Expectations	What could it look like? Cross Curricular opportunities
Programming – algorithms	Understand what an algorithm is and what it is used for.  Set a sequence of instructions to achieve a goal. Use iteration to develop more efficient instructions.	<i>The term “algorithm” should be introduced and understood but pupils are not required to use it.</i>  <i>Make a sandwich</i>
Control	Use programming skills to control an external device.  Use instructions to model control of a device. Anticipate the effect of adding a new instruction.	
Hardware	Identify external components and peripherals.  Recognise different computerised systems/devices.	<i>Keyboard, mouse, monitor</i> <i>Recognising wide ranges of devices e.g. washing machines</i>
Software	No specific skills, apart from those in Digital Literacy and IT Skills strands.	
Data Representation	Understand that data represents information and that it comes in many forms.	<i>Numbers, text, pictures, sounds, videos</i>
Networking	Know the difference between networked and stand-alone devices and how connectivity affects use.	
Databases	N/A	

**Key Stage 2  
Computer Science UK Statutory Requirement**

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 detect and correct errors in algorithms and programs.

Understand how computer networks including the Internet work; how they can provide multiple services, such as the World Wide Web.

Appreciate how search results are selected and ranked.

**Key Stage 2  
Computer Science Framework  
Generic Skills for Computer Science**

Debugging

Use appropriate aspects of system lifecycle when designing a program

Know how to deconstruct a problem into components

Essential Skills	Key Stage 2 Expectations	What could it look like? Cross Curricular opportunities
Programming – algorithms	<p>Understand what a program is.</p> <p>Use selection in a set of instructions (making decisions).</p> <p>Combine selection and iteration in a set of instructions.</p> <p>Use variables and procedures in a program.</p> <p>Using inputs and outputs in a program.</p>	
Control	<p>Use and create sequential flow charts to represent algorithms.</p> <p>Represent and understand iteration and selection in a flow chart.</p> <p>Use/understand the application of sensors in systems/devices.</p>	

Hardware	<p>Identify main internal components. Classify components; input, process, storage, output.</p> <p>Understand different methods of hardware connectivity.</p>	<p><i>CPU, RAM, Interfaces, non-volatile storage.</i></p> <p><i>Wired connectivity (e.g. USB, HDMI)</i> <i>Wireless connectivity (Bluetooth, WIFI, IR)</i></p>
Software	Know the difference between operating systems and applications software.	
Data Representation	<p>Know that computers use binary representation.</p> <p>Understanding that file sizes are represented in different units.</p>	<i>bit, nibble, byte, kB, MB, GB, TB</i>
Networking	<p>Know that Internet is a network – discriminate between the Internet and the Web.</p> <p>Explain the terms “LAN” and “WAN” and be able to give an example of each.</p> <p>Identify methods to connect to different networks and identify simple trouble-shooting procedures.</p> <p>Know the structure of domain names and URLs. Appreciate how the results of Web searches are selected and ranked.</p>	
Databases	Use of spreadsheets as pseudo-databases.	<i>Introduction to databases</i>

**Key Stage 1  
Digital Literacy UK Statutory Requirement**

Pupils should be taught to;

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 contact on the Internet or via online technologies

**Key Stage 1  
Digital Literacy Framework  
Generic Skills for Digital Literacy**

Understand and follow the school Responsible Use Agreement.

Essential Skills	Key Stage 1 Expectations	What could it look like? Cross Curricular opportunities
Fact or Fiction Searching	Begin to understand that not everything that is published as fact on the Web is actually true.	<i>Examples of hoax websites (e.g. <a href="http://www.thedogisland.com">www.thedogisland.com</a>)</i>
Searching Skills	Recognise at least two Web search engines. Complete simple one/two word online searches with support.	<i>e.g. in cross curricular subjects</i>
Copyright	Understand the need to acknowledge copy-and-paste sources; have an awareness of plagiarism.	
Online Experiences and Social Media	Understand VLE courtesy and online etiquette ("netiquette").	<i>Only writing what you would say to someone.</i>
E-Safety	Know what to do if you encounter something that you did not expect online. Know with whom you are communicating online. Know how to report something if it upsets you. Know not to give personal details away.	<i>Hector the Protector</i>
Cloud Computing	Know what references to "the Cloud" mean.	<i>Use of the VLE (a Cloud-based service)</i>
Security Passwords/Passcodes	Understand why passwords are needed.  Remember and keep safe your own username and password.  Respect other people's privacy by not asking for or stealing their passwords.	

<p>Web Threats Phishing/Spam/Filtering</p>	<p>Understand that the Web contains a wide variety of content, some of which is not suitable for children. Know that access to the Web is filtered in school (and may be by some parents too) so that content that is intended for adults is blocked for children.</p> <p>Understand the implications of in-play add-ons and in-app purchases.</p>	<p><i>The Web is like a huge library where some of the books are suitable for everybody and some are suitable only for adults.</i></p>
<p>Connectivity</p>	<p>Begin early discussion about networks.</p>	
<p>Devices and Operating Systems</p>	<p>Understand the meaning of “devices”, “hardware”, “software” and “operating system”. Understand that there is a range of different devices used in the social world and that these can have different interfaces.</p> <p>Know that there are mobile and fixed/static devices/computers, and understand reliability and availability of services (connections).</p> <p>Know how to look after devices.</p>	<p><i>e.g. Windows, iOS, Mac-OS and Android</i></p>

**Key Stage 2  
Digital Literacy UK Statutory Requirement**

Pupils should be taught to;

Understand computer networks, including the Internet; know how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communications and collaboration.

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.

**Key Stage 2  
Digital Literacy Framework  
Generic Skills for Digital Literacy**

Responsible Use Agreement

Essential Skills	Key Stage 2 Expectations	What could it look like? Cross Curricular opportunities
Fact or Fiction Searching	<p>Be able to use different search engines, making decisions based on critical analysis. Know that not all information on the Internet is true.</p> <p>Be able to verify information using multiple reference sources. Know indicators that identify legitimate websites and know the value of using such websites.</p>	<p><i>e.g. Tree Octopus (<a href="http://www.zapatopi.net/treectopus">www.zapatopi.net/treectopus</a>) and Victorian robots (<a href="http://www.bigredhair.com/robots">www.bigredhair.com/robots</a>)</i></p> <p><i>e.g. domain names that include .ac.uk or .edu</i></p>
Searching Skills	<p>Show perseverance in finding the correct information. Know how to refine search terms to reduce ambiguity.</p> <p>Know how to use the tabs for images, videos etc and how to conduct an advanced search.</p>	<p><i>e.g. Victorian railways rather than just railways</i></p>
Copyright	<p>Acknowledge intellectual property as a concept and understand why plagiarism is to be avoided.</p> <p>Be able to reference sources of information in a clear and specific manner.</p>	<p><i>Intellectual property is created by somebody. Intellectual property includes films, pictures and music</i></p>
Online Experiences and Social Media	<p>Know the implications of actions such as online commenting and be able to post appropriately. Recognise and know how to respond to inappropriate postings.</p> <p>Know how to Report and Block people on social networking sites and which action to choose in different situations.</p>	<p><i>e.g. CEOP button</i></p>

E Safety	<p>Know where to get help if you are cyber-bullied and how to report incidents (including in school).          Be aware of appropriate use of ‘phones and text messaging, including messaging apps.          Know your online posts can be shared out of your control and manipulated.          Know why it is important to know who you are talking to online.          Be aware of the strategies people use to gain your confidence to do you harm.          Know how to protect yourself with privacy settings.          Be considerate of others when posting information.          Know that hash-tagging can make data more searchable.          Use online gaming appropriately.          Know the importance of terms and conditions.</p>	<p><i>e.g.</i>  <i>www.beatbullying.org</i></p> <p><i>Age-appropriate gaming (PEGI guidelines)</i></p> <p><i>e.g. age restrictions</i></p>
Cloud Computing	Know how to use online services.	<i>e.g. Scratch, Kudo</i>
Security Passwords/Passcodes	<p>Know how to create secure passwords and appreciate the need to keep passwords private.          Know that your personal information has value and that some people may try to steal it.</p>	<i>Change passwords on a regular basis; choice and strength.</i>
Web Threats Phishing/Spam/Filtering	<p>Be aware of email threats, phishing and spam.          Know the threats of malware when downloading data.          Know the risks of pop-up messages and bloatware.          Know the importance of reading service messages that are displayed by your computer, especially when downloading software; be aware of tick-box options and use them wisely.          Know that viruses are a threat and how to take precautions to avoid them.          Know that sometimes it is better NOT to download.</p>	<i>e.g. Look at downloads that come with “bundled” toolbars as well as hidden malware</i>
Connectivity	<p>Know the difference between; wireless, wired and mobile networks.          Be aware of network speed and costs; the selection and the limitations of networks.          Know the difference (but likely link) between connection speeds and download limits.</p>	<i>e.g. Roaming costs</i>
Devices and Operating Systems	<p>Know what is an operating system (OS).          Know that different devices could be used for the same purpose.          Know that different devices may have different operating systems.          Demonstrate use of different browsers.</p>	<i>e.g. Not all tablets are iPads... pupils to research device time-lines (evolution)</i>

**Key Stage 1  
IT Skills UK Statutory Requirement**

Pupils should be taught to;

Use technology purposefully to create, organise, store, manipulate and retrieve digital content

**IT Skills Framework  
Generic Skills for IT  
Key Stage 1**

Able to open, save, edit, copy, insert and paste with different formats.

Able to print, save in different locations; locally and remotely.

Use touch-screens and have unaided keyboard skills.

Trouble-shoot simple problems with assistance.

Essential Skills	Key Stage 1 Expectations	What could it look like? Cross Curricular opportunities
Word Processing	Open, Save and edit documents. Insert objects, media and different fonts.	
Spreadsheet	Understand what a spreadsheet is for. Navigate cells.  Create simple graphs.	
Presentation	Open, save and edit documents. Insert objects, media, different fonts and new slides.	
Creative Communication Skills	Use a username and password. Use the VLE, both passively and actively.  Use multimedia (record and display).	<i>Forums/blogs/post homework</i>  <i>Photographs, videos, audio</i>
Communication Tools	Participate in real time communications (Voice/Video over Internet Protocols - VoIP).	<i>e.g. Facetime / Skype</i>
Accessibility	Use a mouse and keyboard. Use the shift button.	

**Key Stage 2  
IT Skills UK Statutory Requirement**

Pupils should be taught to;

Use technology effectively

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

**Key Stage 2  
IT Skills Framework  
Generic Skills for IT**

Open, Save and Edit, Copy, Insert and paste in different formats; printing, folder structure, uploading local and remotely

Shortcut keyboard skills; home row for touch-typing

Initiation, responding to and blocking social media

Trouble-shooting at an age-appropriate level

Essential Skills	Key Stage 2 Expectations	What could it look like? Cross Curricular opportunities
Word Processing	<p>Know how to spell check and insert objects. Be able to save in different formats.</p> <p>Know how to change document layouts and margins; create tables and copy, cut and paste.</p> <p>Know that the format chosen may restrict access by other people using different software (or in some cases different devices)</p>	<p><i>e.g. compatibility with "old formats" – analogy with music formats (vinyl, cassettes, MP3s)</i></p>
Spreadsheet	<p>Be able to format cells, label axes and create simple formulae. Know how to create a graph and change the graph format.</p> <p>Be able to use a spreadsheet as a simple database and filter and sort the database.</p>	<p><i>"How did you get to school?" bar chart</i> <i>When is your birthday?</i></p> <p><i>Census</i></p>
Presentation	<p>Be able to create a presentation that is designed for a particular audience. Incorporate a range of media.</p> <p>Know how to insert transitions, internal and external hyperlinks and use animation effectively.</p>	<p><i>Games- yes/no links</i></p>

<p>Creative Communication Skills-Web Posts</p>	<p>Know how to manage multiple log-ins and passwords. Know how to enable privacy on web posts.</p> <p>Be able to participate in collaborative and personal web posting.</p> <p>Be able to create content within the VLE and upload additional content.</p>	<p><i>Forums/blogs/post homework</i></p> <p><i>Recognise the needs of, and appropriate behaviours for, different audiences</i></p>
<p>Multimedia</p>	<p>Be able to edit and export media; audio, still and moving images.</p> <p>Know how to create animations and use publishing media.</p> <p>Know how to use screen-capture on a range of different devices.</p>	<p><i>e.g. Stop Frame Animation</i></p> <p><i>Use of screen-capture for preserving evidence of bullying</i></p>
<p>Communication Tools</p>	<p>Choose appropriate methods of communication for different audiences.</p> <p>Be able to create, access and send emails.</p> <p>Know how to reply to and forward emails.</p> <p>Be able to add an attachment, send to multiple recipients and save contacts.</p> <p>Know how to initiate and receive VoIP calls.</p>	<p><i>e.g. How best to communicate (medium and language) with one person, with a specific group of friends or with a broader community</i></p>
<p>Accessibility</p>	<p>Appreciate the importance of typing as an efficient means of entering information into a computer (especially as a workplace skill).</p> <p>Be aware of methods to improve typing skill and know important keyboards short-cuts.</p>	<p><i>Access to typing tutor software to establish and improve typing skills</i></p>

	<b>Computer Science</b>
Foundation Stage	
Key Stage 1	<p>Understand what algorithms are; how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p>
Key Stage 2	<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and detect and correct errors in algorithms and programs.</p> <p>Understand the basics of computer networks including the Internet; how they can provide multiple services, such as the World Wide Web.</p>

	<b>Digital Literacy</b>
Foundation Stage	
Key Stage 1	<p>Recognise common uses of information technology beyond school.</p> <p>Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about contact on the Internet or via online technologies.</p>
Key Stage 2	<p>Understand computer networks, including the Internet; know how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communications and collaboration.</p> <p>Be discerning in evaluating digital connect.</p> <p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>

	<b>ICT Skills</b>
Foundation Stage	<p>Children recognise that a range of technologies is used in places such as homes and schools.</p> <p>They select and use technology for particular purposes.</p>
Key Stage 1	<p>Use technology purposefully to create, organise, store manipulate and retrieve digital content.</p>
Key Stage 2	<p>Use search technologies effectively; appreciate how results are selected and ranked.</p> <p>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, evaluation and presenting data and information.</p>