# Digital Skills for the Future
# NI Curriculum

October 2022

www.ccea.org.uk

# Primary Using ICT and Digital Skills

Ciara Mahon

# What is it that we're trying to achieve at Primary?

CCEA prioritises Using ICT and digital skills as a key educational and economic driver for Northern Ireland and as one of the most transferable skills for young people to thrive in a digital age.

- Digital Citizens
- Digital Workers
- Digital Makers

- Engagement and fun
- Enhance/ Enable Learning
- Removing barriers to learning
- Opportunities to experience and develop specific skills

# Broad tiers of digital skills required by individuals, society and the economy

We want to ensure that digital skills in the NI Curriculum addresses and contributes to young people becoming:

**DIGITAL CITIZENS**

developing skills that will be useful if they wish to take part in digital aspects of society, safely and without hindrance.

**DIGITAL WORKERS**

developing skills that will be useful as they have an increasing need to apply their digital skills in a work-related setting or to further their learning.

**DIGITAL MAKERS**

developing skills that will be useful as they start to build their own digital technology.

# The 5 'E's

Rewarding Learning

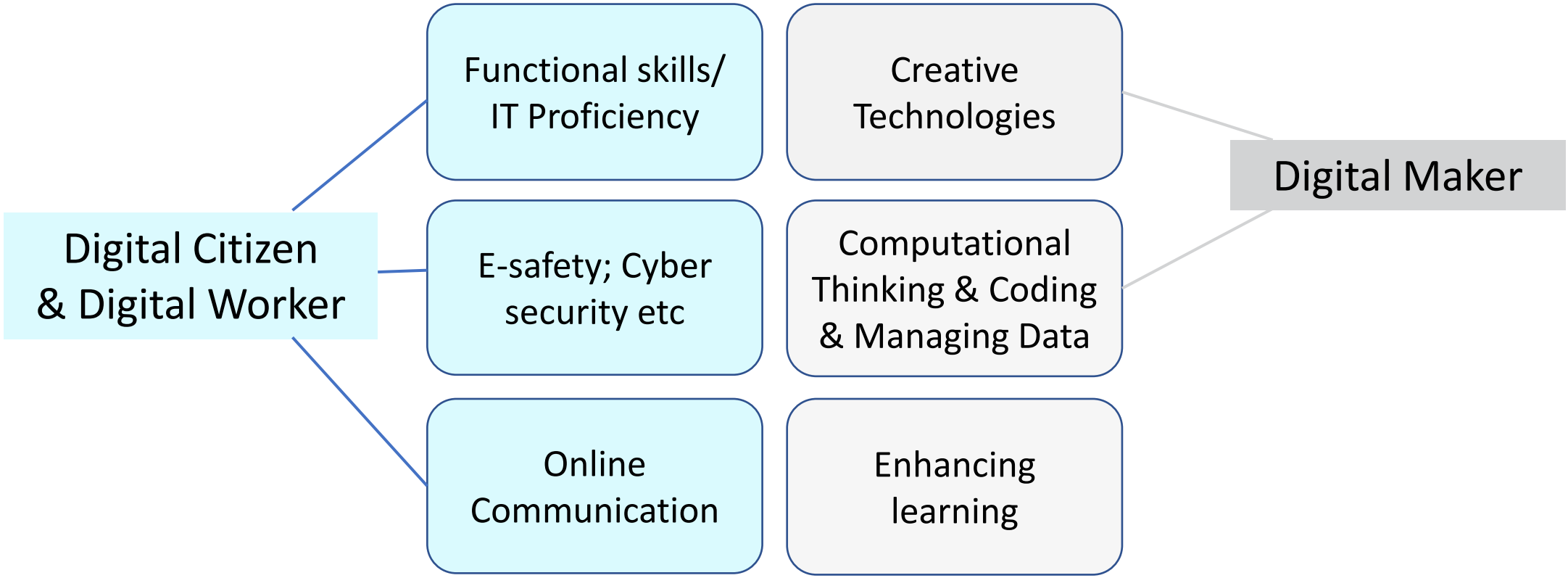
| Explore (1 & 2) | Express | Exchange | Evaluate | Exhibit |
|---|---|---|---|---|

ACROSS THE CURRICULUM, AT A LEVEL APPROPRIATE TO THEIR ABILITY, WE WANT ALL PUPILS TO BE ABLE TO:

| | | | | | | |
|---|---|---|---|---|---|---|
| STATUTORY SKILLS | EXPLORE 1<br>access, select, interpret and research information from safe and reliable sources; | EXPLORE 2<br>investigate, make predictions and solve problems through interaction with digital tools. | EXPRESS<br>create, develop, present and publish ideas and information responsibly using a range of digital media and manipulate a range of assets to produce multimedia products. | EXCHANGE<br>communicate safely and responsibly using a range of contemporary digital methods and tools, exchanging, sharing, collaborating and developing ideas digitally. | EVALUATE<br>talk about, review and make improvements to work, reflecting on the process and outcome and consider the sources and resources used, including safety, reliability and acceptability. | EXHIBIT<br>manage and present their stored work and showcase their learning across the curriculum, using ICT safely and responsibly |
| | Opportunities to develop knowledge and understanding of e-safety and acceptable online behaviour. | | | | | |

- Apply to all children from Year 1 to Year 7.
- Children should have opportunities to develop the 5 ‘E’s across the key stage.

# ICT in the classroom



# "Opportunities to develop knowledge and understanding of e-safety and acceptable online behaviour"

Rewarding Learning

Digital Wellbeing

Digi-Etiquette, footprint and identity

Digital Security and privacy

Digital Commerce

Digital law

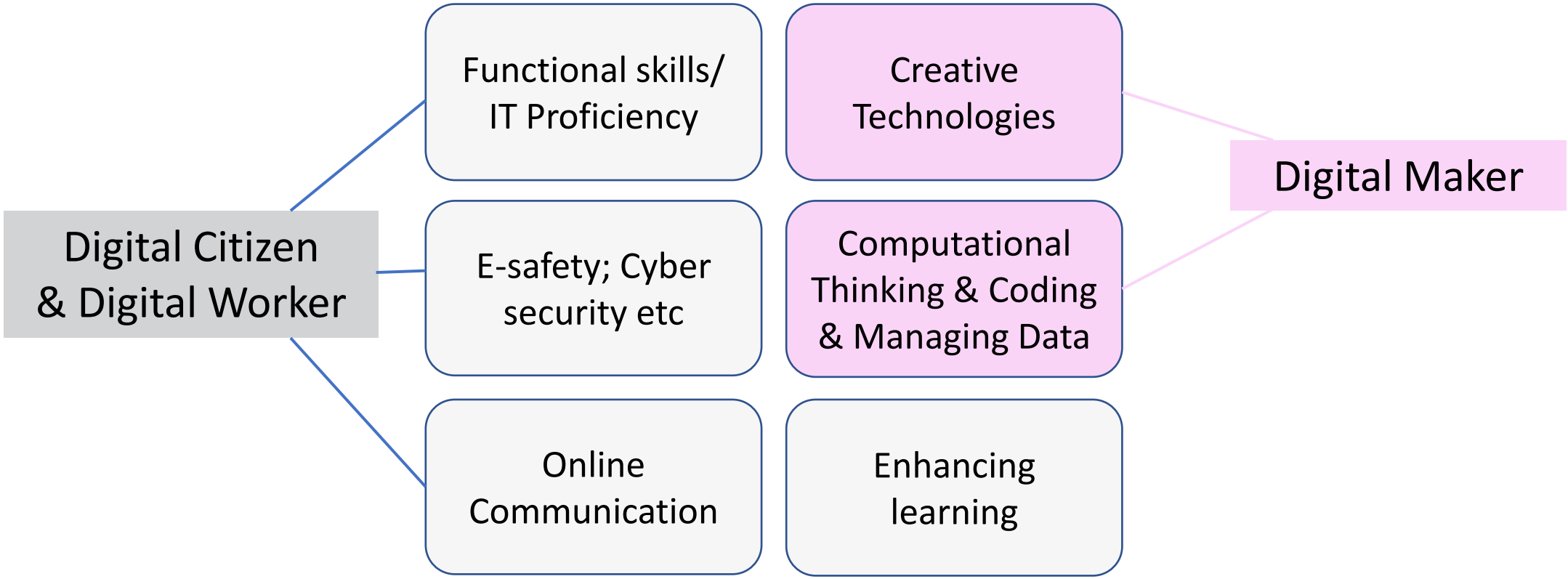
IT Proficiency

# "Opportunities to develop knowledge and understanding of e-safety and acceptable online behaviour"

Rewarding Learning

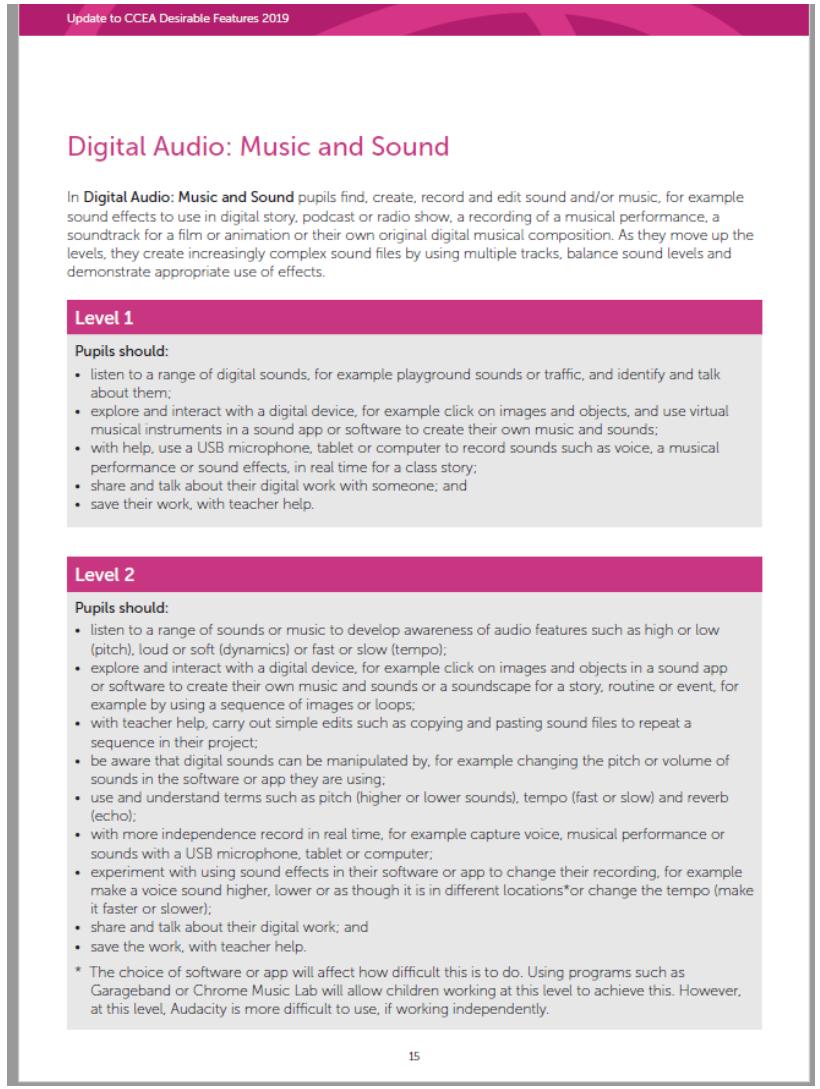
| Digital for Life and Work | *For example* |
|---|---|
| **Digital Wellbeing** | *Social media; online v offline; reality* |
| **Digi-Etiquette, Footprint and Identity** | *Online reputation; cyberbullying; appropriate content* |
| **Digital Commerce** | *Financial capability: Gaming and gambling; Loot boxes; Skins/ Adds-ons/ Resource packs; Cryptocurrencies* |
| **IT Proficiency** | *Troubleshoot, access online tools, connecting to wifi Researching – searching safely and efficiently online* |
| **Digital Security and Privacy** | *Privacy and safety (location etc); Security settings/ protecting your device; Passwords; Scams/ phishing; Clickbait; Visiting online places safely* |
| **Digital Law** | *Rights and responsibilities as a creator and as an owner; Copyright; Hacking* |

# ICT in the classroom



# ICT in the classroom

- Computational Thinking & Coding
- Digital Art & Design
- Digital Audio: Music and Sound
- Digital Storytelling: Film & Animation
- Digital Storytelling: Presenting
- Digital Storytelling: Publishing
- Managing Data
- Online Communication



Update to CCEA Desirable Features 2019

## Digital Audio: Music and Sound

In **Digital Audio: Music and Sound** pupils find, create, record and edit sound and/or music, for example sound effects to use in digital story, podcast or radio show, a recording of a musical performance, a soundtrack for a film or animation or their own original digital musical composition. As they move up the levels, they create increasingly complex sound files by using multiple tracks, balance sound levels and demonstrate appropriate use of effects.

### Level 1

**Pupils should:**

- listen to a range of digital sounds, for example playground sounds or traffic, and identify and talk about them;
- explore and interact with a digital device, for example click on images and objects, and use virtual musical instruments in a sound app or software to create their own music and sounds;
- with help, use a USB microphone, tablet or computer to record sounds such as voice, a musical performance or sound effects, in real time for a class story;
- share and talk about their digital work with someone; and
- save their work, with teacher help.

### Level 2

**Pupils should:**

- listen to a range of sounds or music to develop awareness of audio features such as high or low (pitch), loud or soft (dynamics) or fast or slow (tempo);
- explore and interact with a digital device, for example click on images and objects in a sound app or software to create their own music and sounds or a soundscape for a story, routine or event, for example by using a sequence of images or loops;
- with teacher help, carry out simple edits such as copying and pasting sound files to repeat a sequence in their project;
- be aware that digital sounds can be manipulated by, for example changing the pitch or volume of sounds in the software or app they are using;
- use and understand terms such as pitch (higher or lower sounds), tempo (fast or slow) and reverb (echo);
- with more independence record in real time, for example capture voice, musical performance or sounds with a USB microphone, tablet or computer;
- experiment with using sound effects in their software or app to change their recording, for example make a voice sound higher, lower or as though it is in different locations*or change the tempo (make it faster or slower);
- share and talk about their digital work; and
- save the work, with teacher help.

* The choice of software or app will affect how difficult this is to do. Using programs such as Garageband or Chrome Music Lab will allow children working at this level to achieve this. However, at this level, Audacity is more difficult to use, if working independently.

15

## Level 2

**Pupils should:**

- look at and talk about examples of simple coding projects;
- know that they can break any activity (including coding) down into smaller parts (decomposition); and
- plan what they want to happen in a coding project and write a set of instructions (algorithm) for this.

### Programmable devices

**Pupils should:**

- use their algorithm and logical reasoning to make a Bee-Bot, Sphero or Dash and Dot robot move to a specific location;
- with a partner or in a group, talk about why some instructions or commands haven't worked and fix these (debug);

**or**

### Onscreen turtle, Logo or Minecraft

- use their algorithm and logical reasoning to make the turtle or Minecraft agent follow a specific route;
- with a partner or in a group, talk about why some instructions or commands haven't worked and fix these (debug);

**or**

### Block-based coding apps or software

- use their algorithm and logical reasoning to code a range of motion, looks and sound commands that control a sprite; and
- with a partner or in a group, talk about why some instructions or commands haven't worked and fix these (debug).

### Finally

**Pupils should:**

- with teacher help, save their work to a specific location (if using an app or software) and know how to find and open it again;
- if appropriate, with teacher's help, use digital tools to share their work; and
- show their work and talk to the teacher about what they did and any improvements they could make.

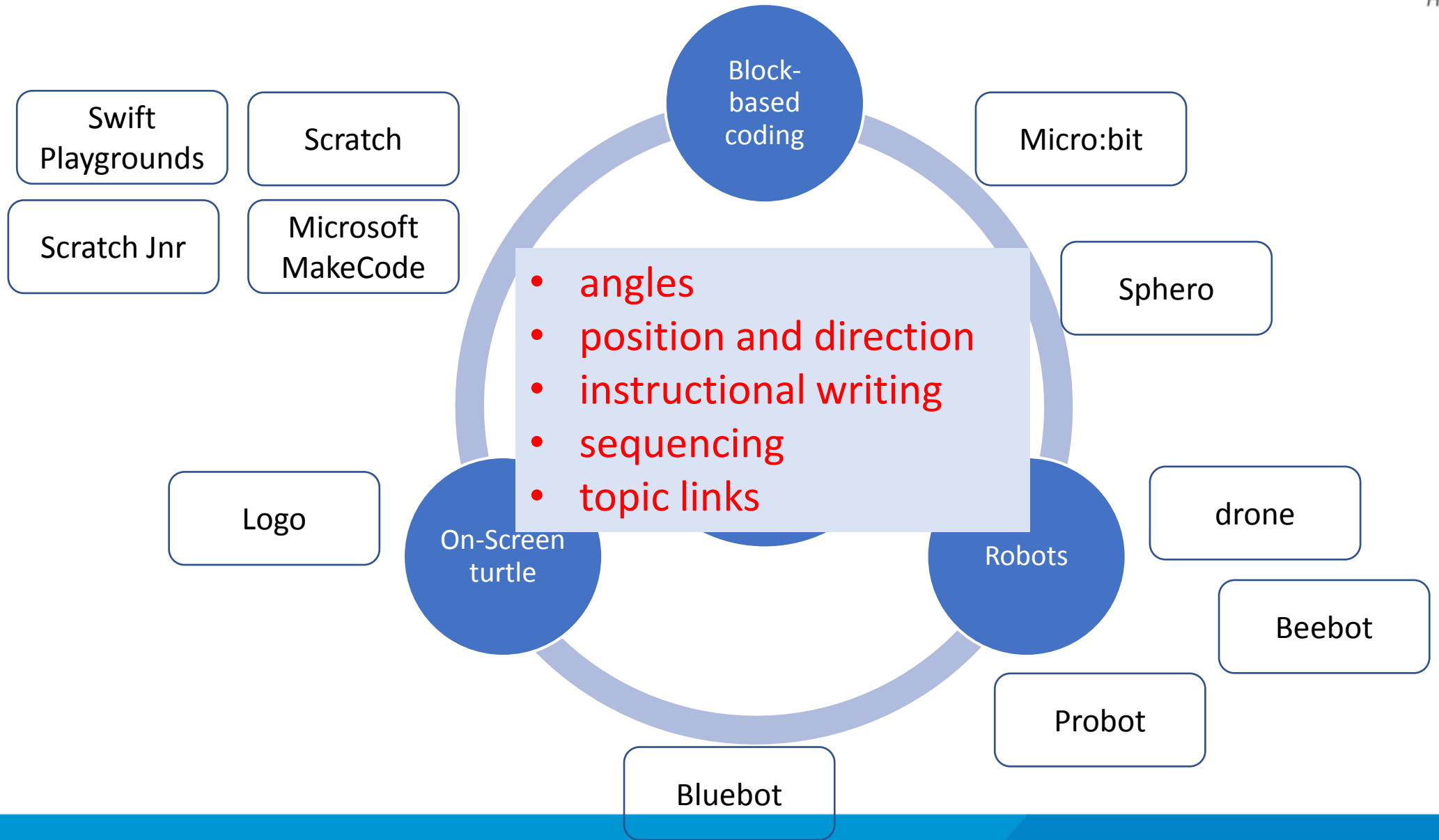
Rewarding Learning

Programmable devices (such as Pro-Bot, Blue-Bot, Parrot Drone, Micro:bit, Sphero

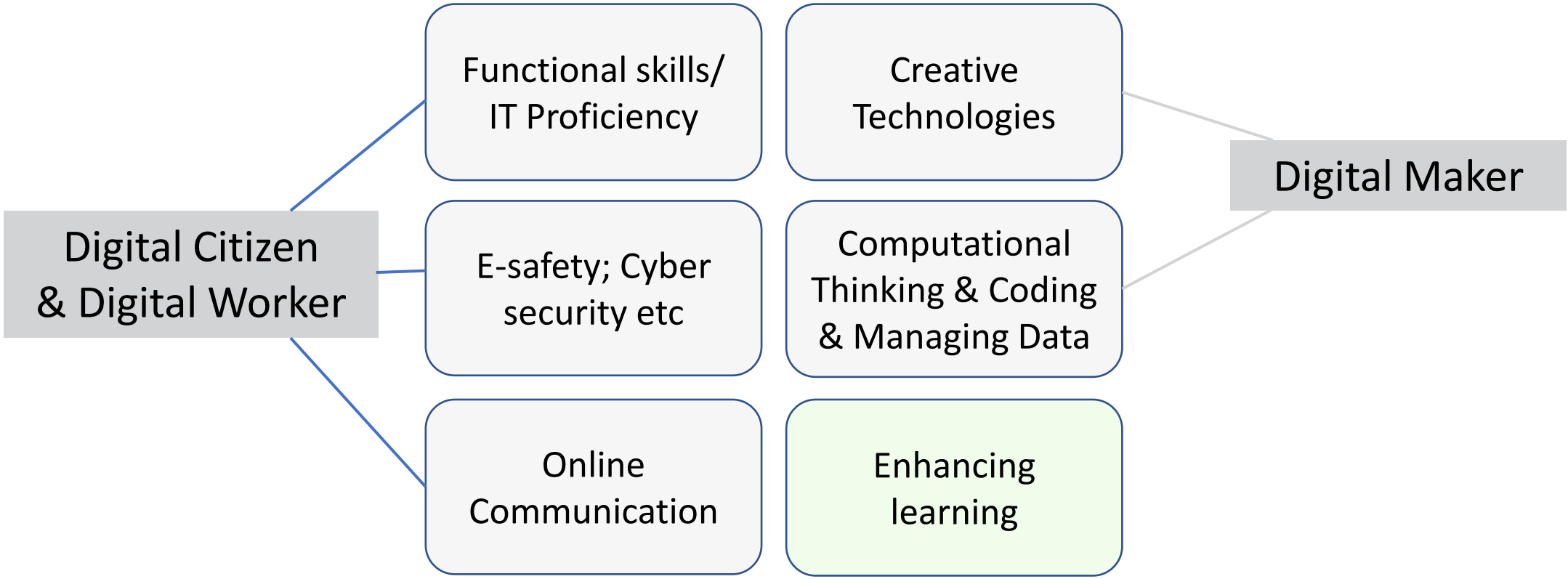
Block-based coding apps or software

Onscreen turtle, Logo or Minecraft

# Computational Thinking & Coding



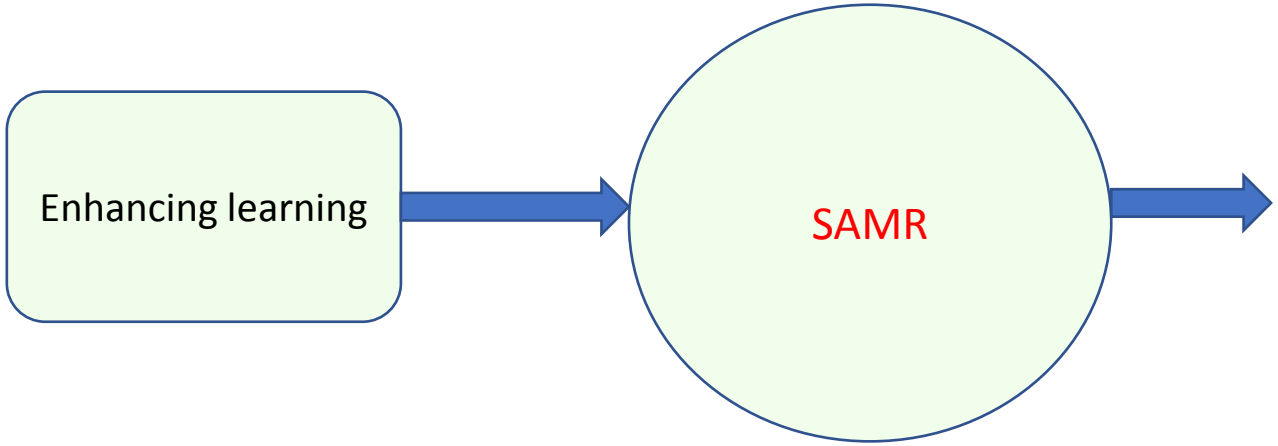
# ICT in the classroom



Rewarding Learning

# Using Technology and ‘Using ICT’

# Using Technology and 'Using ICT'




**Substitution**

Technology acts as a direct tool substitute, with no functional change.

**Augmentation**

Technology acts as direct tool substitute, with functional improvement.

**Modification**

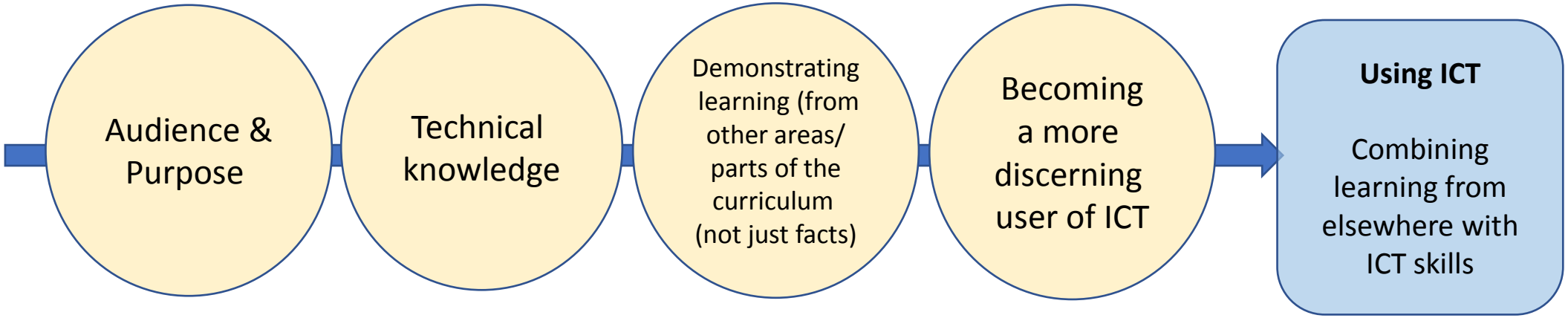
Technology allows for significant redesign.

**Redefinition**

Technology allows for the creation of new tasks, previously inconceivable.

What are the learning outcomes that are planned for?

| Explore (1 & 2) | Express | Exchange | Evaluate | Exhibit |
|---|---|---|---|---|



# Post-Primary Digital Skills

Andrew Douglas

# Digital Skills for the future

Rewarding Learning

## CCEA Digital Skills Framework for Key Stage 3

We want to ensure that learners attending schools in Northern Ireland become:

**DIGITAL CITIZENS**
with the skills that will enable them to take part in digital aspects of society, safely and without hindrance.

**DIGITAL WORKERS**
who are able to apply their digital skills to further their learning or in a work-related setting

**DIGITAL MAKERS**
who are starting to build their own technology

# Digital Skills for the future

Rewarding Learning

**DIGITAL CITIZENS**
with the skills that will

**DIGITAL WORKERS**
who are able to apply

**DIGITAL MAKERS**
who are starting to build their own technology

**Digital for Life & Work**

Digital Wellbeing

Digi-Etiquette, footprint and Identity

Digital Commerce

IT Proficiency

Digital Security and Privacy

Digital Law

# Digital Skills for the future

Rewarding Learning

**DIGITAL MAKERS**
who are starting to build
their own technology

## Digital Technology

Computational Thinking & Coding

Managing Data

Website Development

## Creative Technologies

Digital Storytelling: Film & animation; presenting; publishing

Digital Audio

Digital Art & Design

# Comparison between 2017 and 2022

Rewarding Learning

| | 2017 survey | 2022 survey |
|---|---|---|
| % of schools that have discrete ICT/Computing classes at Key Stage 3 | **74%** | **96%** |
| % of schools that agree there should be a minimum level of computing taught during Key Stage 3 | **84%** | **92%** |
| % of schools that introduce pupils to programming and coding in Key Stage 3 | **63%** | **88%** |
| % of staff in the ICT/computing dept. who can teach computer science/programming | **51%** | **59%** |

# In an average Post-primary school

4.5 teachers teach ICT/Computing

2 teachers of those teachers have an A-level or above in computing


pupils get 50 minutes of discrete ICT/computing a week in Key Stage 3

# What might a pupil experience across Key Stage 3?

Rewarding Learning

## Collaboration

Microsoft Teams

Google Classroom

Apple Schoolwork

## Digital Identity

## Digital Wellbeing

## Staying Safe Online

## IT proficiency

Office

Excel OneNote Outlook Word PowerPoint

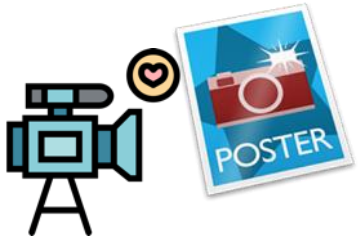
Troubleshooting

## Digital Art & Design

## Digital Audio

## Digital Storytelling

- Publishing
- Presenting
- Film & Animation





## Computational Thinking & Coding

## Website Development

## Managing Data

*More likely to be seen if discrete IT/Computing is offered*

# What might a pupil experience across Key Stage 3?

Key Stage 3 Using ICT

Rewarding Learning

**Exchange**

## Collaboration

Microsoft Teams

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Troubleshooting

Digital Art & Design

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Digital Storytelling
- Publishing
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Computational Thinking & Coding
Website Development
Managing Data

*More likely to be seen if discrete IT/Computing is offered*

# What might a pupil experience across Key Stage 3?

Rewarding Learning

## Approaches to becoming a Digital Maker


Key Stage 3
**Using ICT**

| Explore | Express | Evaluate |
|---|---|---|
| PLAN | DO | REVIEW |

## Digital Art & Design

## Digital Audio

## Digital Storytelling
- Publishing
- Presenting
- Film & Animation



## Computational Thinking & Coding
## Website Development
## Managing Data

*More likely to be seen if discrete IT/Computing is offered*

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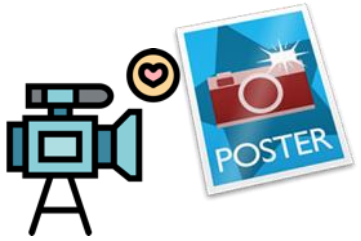



## Computational Thinking & Coding

## Website Development

## Managing Data

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# Digital Qualifications

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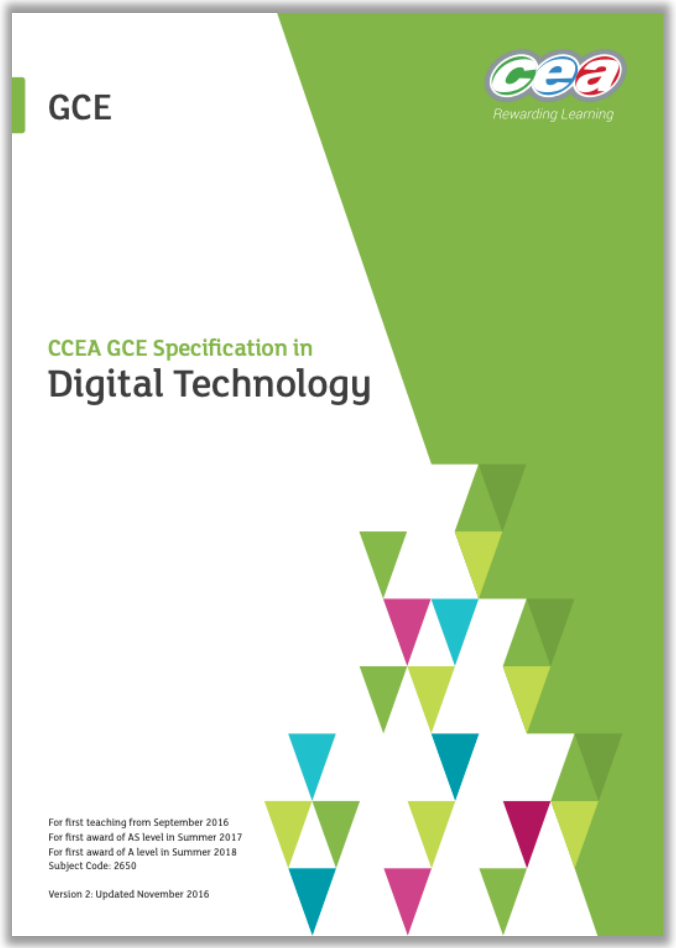
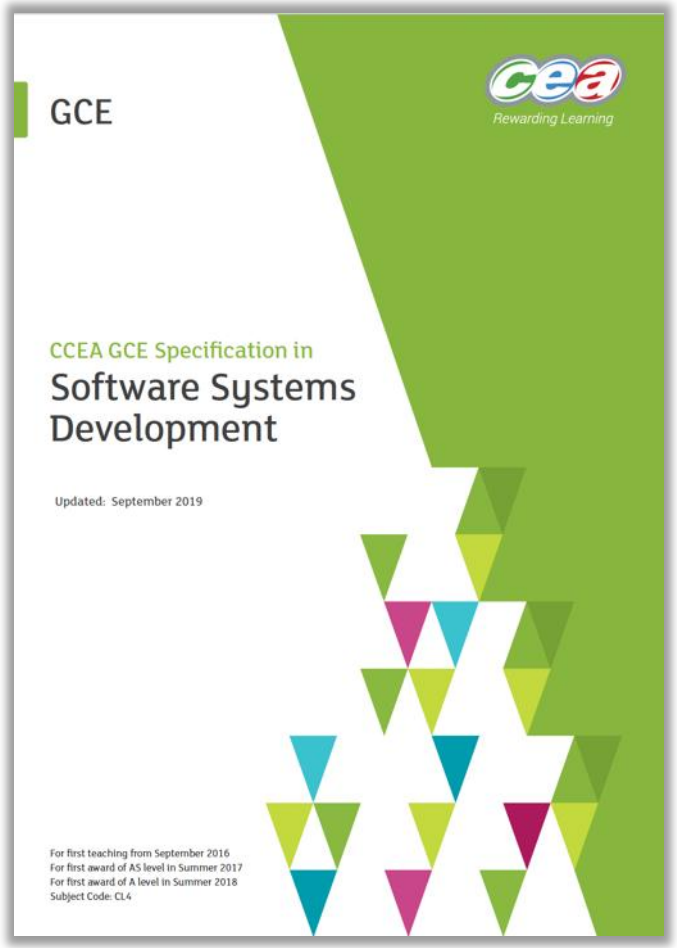
# The Revision of Qualifications

Rewarding Learning

# GCSE Digital Technology

## Available for first teaching in September 2017


The CCEA GCSE Digital Technology is **unique in the UK**. Students choose either Route A: Multimedia or Route B: Programming.

Students acquire and apply knowledge and understanding of digital technology in a variety of contexts.

They also develop creative and practical digital technology skills, either using a range of generic software or in an object-oriented environment.

# GCSE Digital Technology

## Available for first teaching in September 2017


### Core Unit (Unit 1)

- Digital data
- System software
- Database applications
- Spreadsheet applications
- Computer hardware
- Network technologies
- Cyberspace, network security and data transfer
- Cloud technology
- Ethical, legal and environmental impact of digital technology

# GCSE Digital Technology

## Available for first teaching in September 2017


### Multimedia route

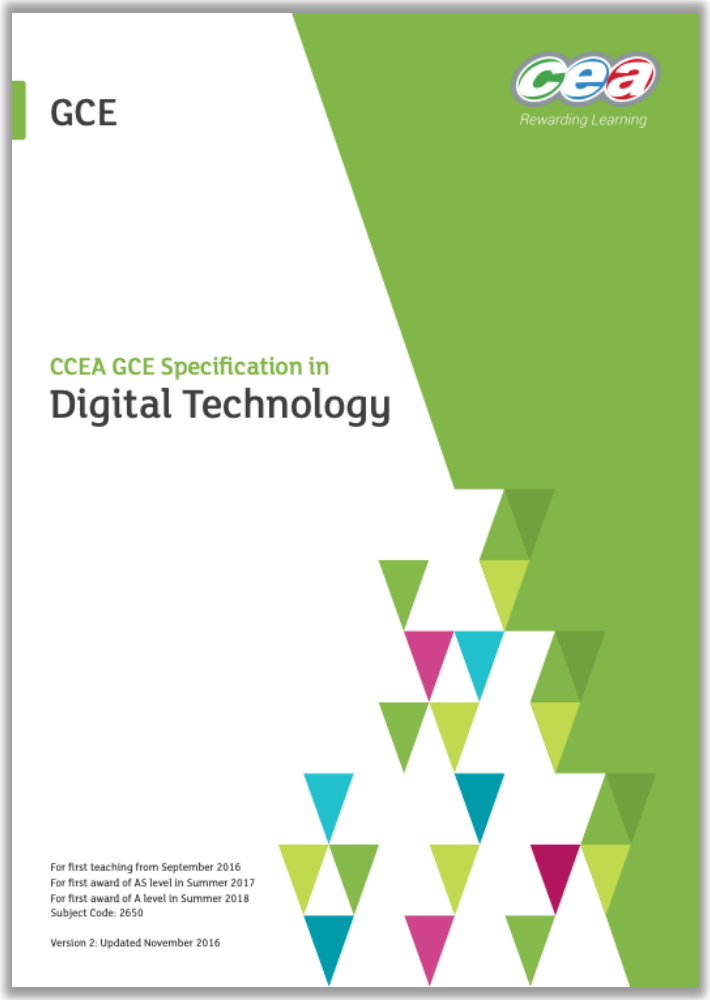
- Website design, including:
  - the use of scripting to implement sequencing, selection, repetition, and event programming in multimedia authoring software
  - The use of HTML to build websites
- Database development, including
  - Entity-relationship diagrams
  - Creating complex queries using SQL statements

### Programming route

- Design, develop and test coded solutions using Python, C# or Java

# GCE Digital Technology

## Available for first teaching in September 2016

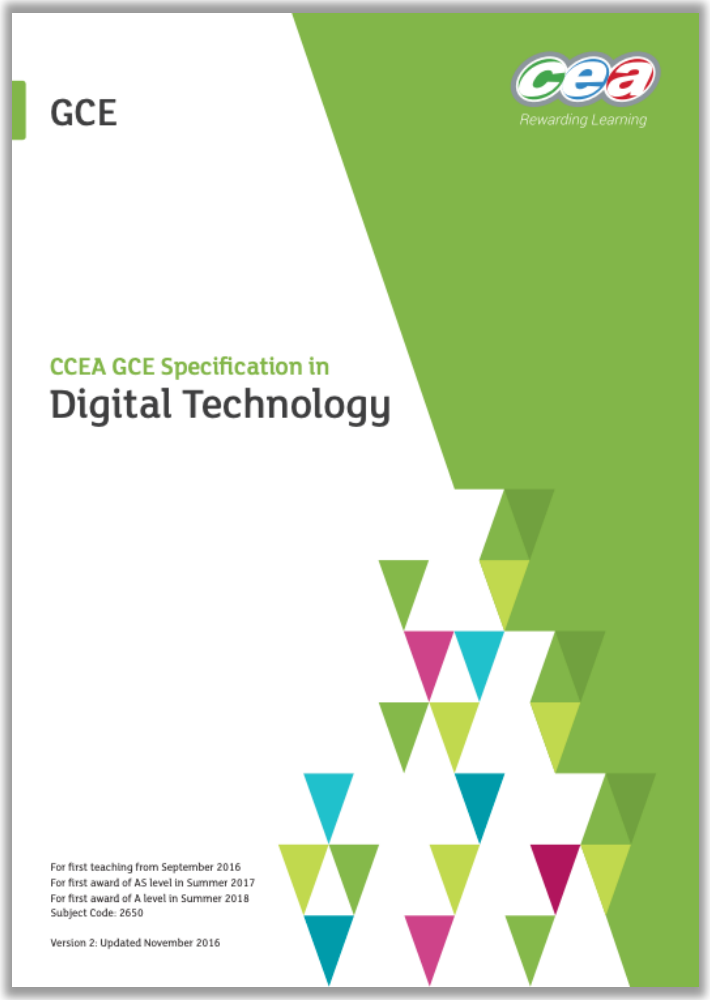



GCE Digital Technology is for students interested in current and emerging technologies, the impact they have and how to use them effectively.

It gives students opportunities to develop advanced skills in a range of development environments and apply these to relevant work-related scenarios.

# GCE Digital Technology

## Available for first teaching in September 2016

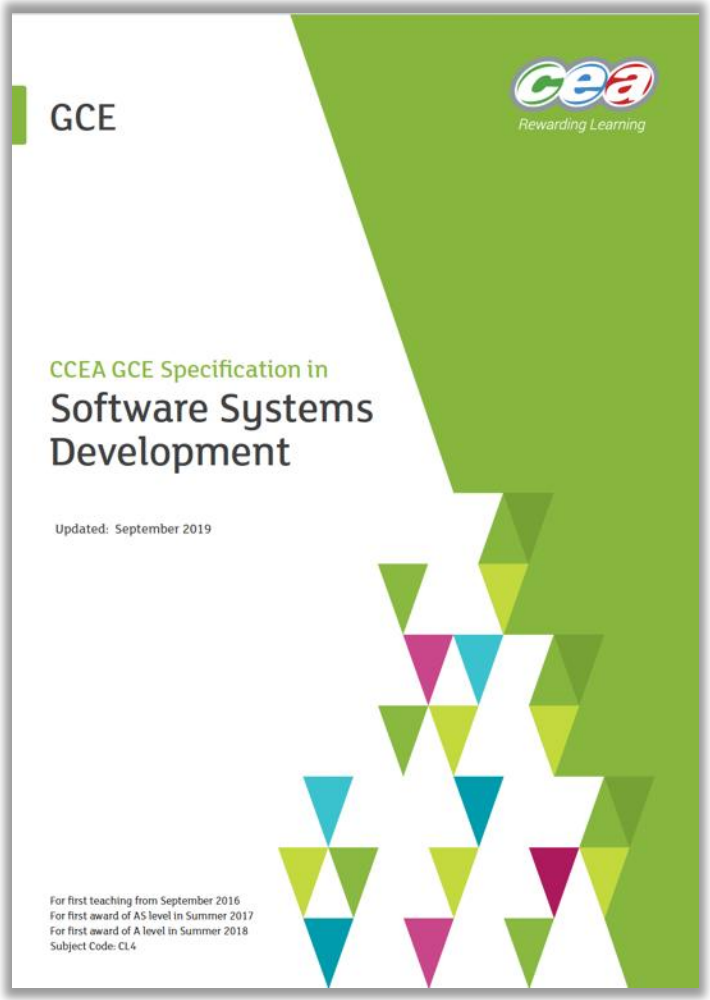



### The specification covers:

- Approaches to Systems Development
- Programming
- Data representation
- Data and information
- Hardware and software
- Web technology and multimedia
- Networks
- Databases, including normalisation and use of SQL
- Applications of digital technology
- Individual, social and legal considerations
- Application development

# GCE Software Systems Development

## Available for first teaching in September 2016




The CCEA GCE Software Systems Development specification encourages students to develop the knowledge, understanding and skills necessary for working in the software industry.

In the AS units, students adopt an object oriented approach to problem solving. They develop their object oriented skills while learning to appreciate the benefits of developing applications in this type of environment.

Students who continue to A2 develop their understanding of the reasons for systems development. They are introduced to important database concepts that enable them to understand relational database systems implemented through Structured Query Language (SQL).

# GCE Software Systems Development

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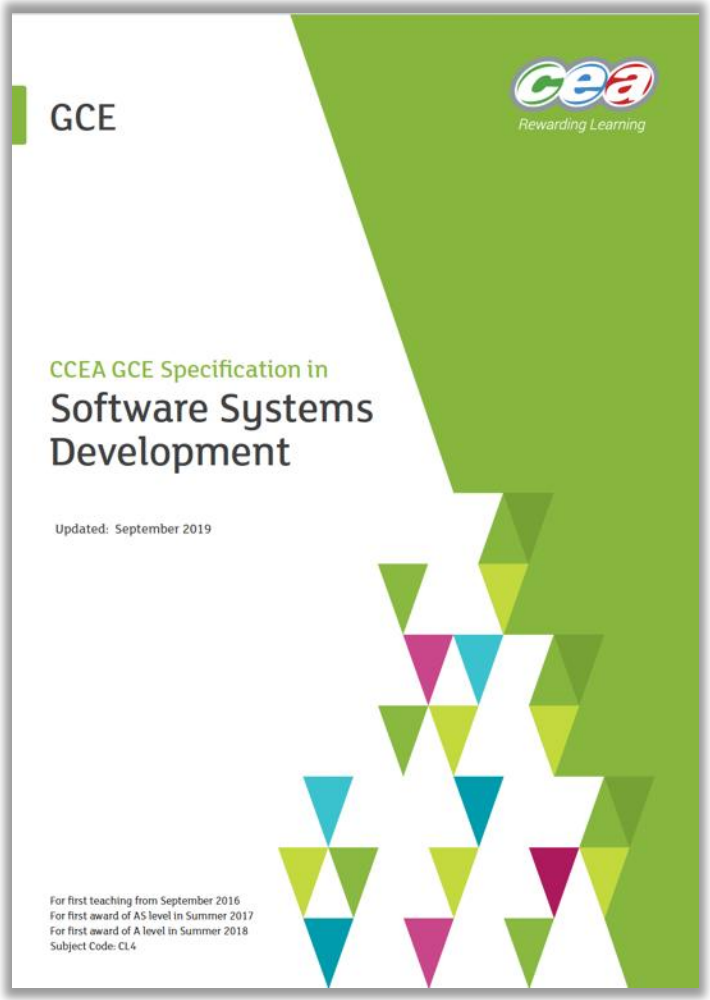



### The specification covers:

- Introduction to Object Oriented Development
- Event Driven Programming
- Systems Approaches and Database Concepts
- Implementing Solutions

# Industry support

Rewarding Learning

Allstate Northern Ireland

QUEEN'S UNIVERSITY BELFAST

kainos

Liberty Information Technology

pwc

Deloitte.

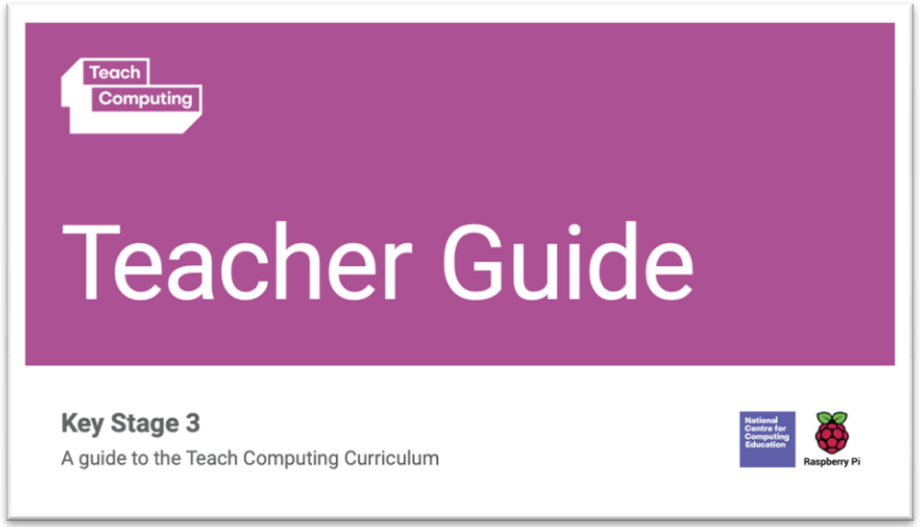
# Next Steps?

# Next steps in Key Stage 3

Rewarding Learning

A group of schools/teachers:

- to provide guidance on **Digital for Life and Work**; and
- to begin mapping the **National Centre for Computing Education** resources to the Northern Ireland Curriculum, incorporating Project Quantum.





www.teachcomputing.org

www.diagnosticquestions.com

# Some thoughts to reflect on

Rewarding Learning

- When we use online tools like Microsoft Teams or Google Classroom, do learners get the opportunity to collaborate, or is just used to share work?
- How often do our learners get the opportunity to become Digital Makers?
- What would be the most appropriate aspect of Using ICT/Digital Skills for a subject to develop?
- Do the planned digital activities develop learners' problem-solving skills?
- Do learners ever engage in a plan-do-review cycle?

Rewarding Learning

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