Barrow CEVC Primary School

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COMPUTING IMPLEMENTATION

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Computing - Implementation

Modular Approach – Knowledge

At Barrow Primary School, Computing is taught through our modular curriculum and adapted from Keychain lesson plans and resources. The modules enable pupils to study in depth key computational understanding, digital skills and vocabulary. Each module aims to activate and build upon prior learning, including EYFS, to ensure better cognition and retention. Each module is carefully sequenced to enable pupils to purposefully layer learning from previous sessions to facilitate the acquisition and retention of key knowledge. Individual modules and lessons build on knowledge that has previously been taught. Outcomes are revisited either later in the year or in the following year as part of a spaced retrieval practice method to ensure pupils retain key knowledge and information.

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computational thinking						
• Using logical reasoning to read simple instructions and predict the outcome	• Learning that decomposition means breaking a problem down into smaller parts • Using decomposition to solve unplugged challenges • Using logical reasoning to predict the behaviour of simple programs • Developing the skills associated with sequencing in unplugged activities • Learning that an algorithm is a set of step by step instructions used to carry out a task, in a specific order • Follow a basic set of instructions • Assembling instructions into a simple algorithm	• Articulating what decomposition is • Decomposing a game to predict the algorithms used to create it • Using decomposition to decompose a story into smaller parts • Learning what abstraction is • Learning that there are different levels of abstraction • Explaining what an algorithm is • Following an algorithm • Creating a clear and precise algorithm • Learning that computers use algorithms to make predictions • Learning that programs execute by following precise instructions • Incorporating loops within algorithms	• Using decomposition to explain the parts of a laptop computer • Using decomposition to explore the code behind an animation • Using repetition in programs • Understanding that computers follow instructions • Using an algorithm to explain the roles of different parts of a computer • Using logical reasoning to explain how simple algorithms work • Explaining the purpose of an algorithm • Forming algorithms independently	• Solving unplugged problems by decomposing them into smaller parts • Using decomposition to understand the purpose of a script of code • Using decomposition to help solve problems • Identifying patterns through unplugged activities • Using past experiences to help solve new problems • Using abstraction to identify the important parts when completing both plugged and unplugged activities • Creating algorithms for a specific purpose	• Decomposing animations into a series of images • Decomposing a program without support • Decomposing a story to be able to plan a program to tell a story • Predicting how software will work based on previous experience • Writing more complex algorithms for a purpose	• Decomposing a program into an algorithm • Using past experiences to help solve new problems • Writing increasingly complex algorithms for a purpose

Progression of skills for one strand (Computational Thinking) across EYFS to Year 6

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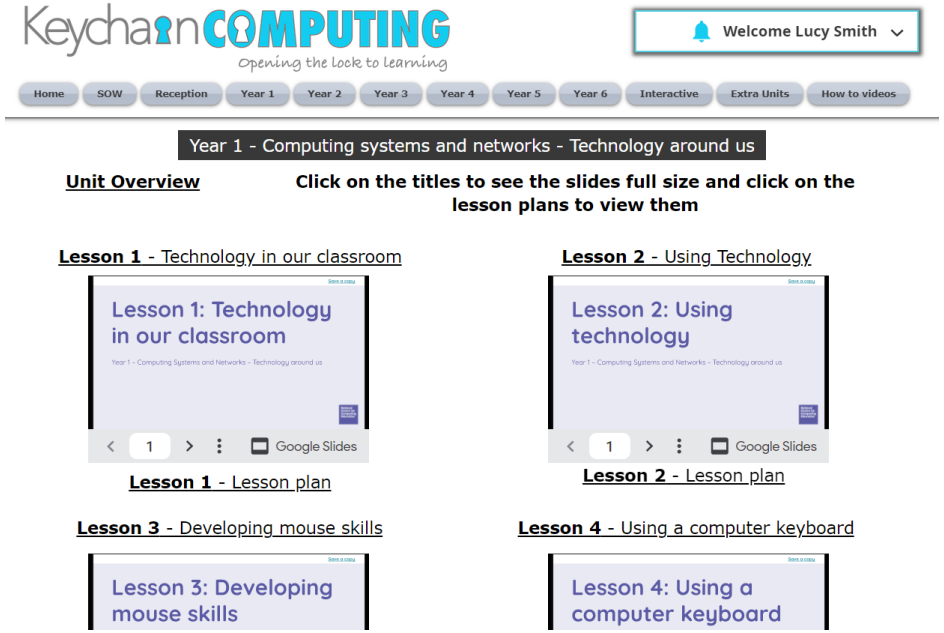
Cumulative Quizzing (Supporting Cognitive Load)

We are currently developing quizzes to bring our Computing provision inline with other foundation subjects where quizzing has proven valuable. The purpose of the short quizzes, is to establish prior knowledge and understanding of the module content. Throughout each module pupils continually revisit the quiz questions and previous content to reinforce key knowledge and vocabulary. At the end of the module, pupils take another quiz to check their understanding and knowledge. As part of spaced retrieval practice, these quiz questions cab be revisited ad hoc to encourage recall.

Planning

All units have sequenced planning from Keychain detailing six sessions, key concepts, knowledge and vocabulary to be taught. Keychain's lessons make use of freely available software and develop pupils' knowledge across five areas of learning: Digital Literacy, Online Safety, Computational Thinking, Computers and Hardware. These feature guidance videos for teachers subject knowledge, teaching videos and teaching slides. Teachers adapt these plans to differentiate or adhere to individual needs of their class.



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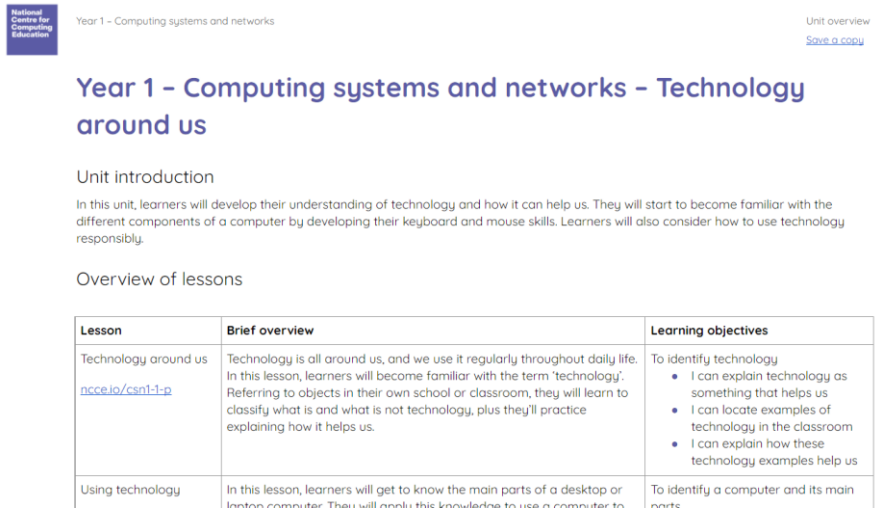
Planning continued…

Keychain computing uses the National Centre for Computing Education (NCCE) planning. Year groups 1-6 are provided with a Unit overview every half term. Within each overview, you will find an individual detailed lesson plan as well as lesson slides (Google slides). The lesson plans also include notes on progression, NC links, assessment opportunities, subject Knowledge
And links to training courses.

Keychain SOW also provide Progression Maps (learning graphs) and links to the National Curriculum (see Computing Intent PPT) for each year group and unit.



Year 1 – Computing systems and networks

Unit overview

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Year 1 – Computing systems and networks – Technology around us

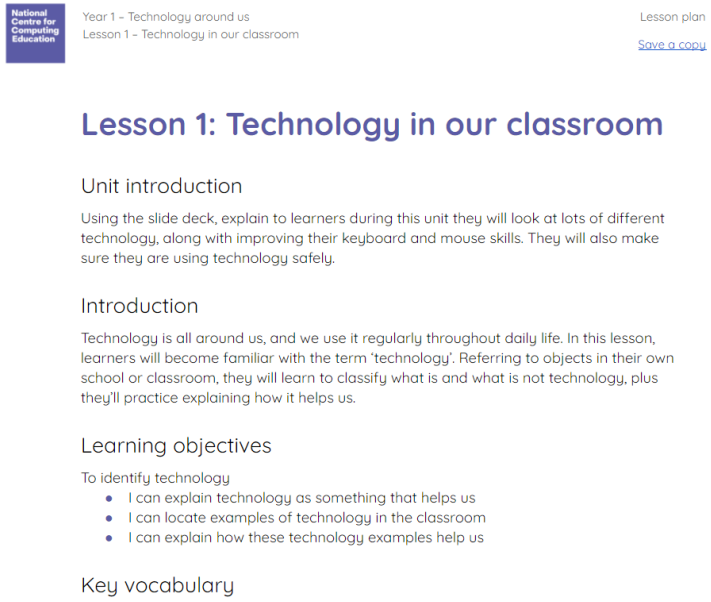
Unit introduction

In this unit, learners will develop their understanding of technology and how it can help us. They will start to become familiar with the different components of a computer by developing their keyboard and mouse skills. Learners will also consider how to use technology responsibly.

Overview of lessons

Lesson	Brief overview	Learning objectives
Technology around us ncce.io/csn1-1-p	Technology is all around us, and we use it regularly throughout daily life. In this lesson, learners will become familiar with the term 'technology'. Referring to objects in their own school or classroom, they will learn to classify what is and what is not technology, plus they'll practice explaining how it helps us.	To identify technology • I can explain technology as something that helps us • I can locate examples of technology in the classroom • I can explain how these technology examples help us
Using technology	In this lesson, learners will get to know the main parts of a desktop or laptop computer. They will apply this knowledge to use a computer to	To identify a computer and its main parts

Unit overview



Year 1 – Technology around us
Lesson 1 – Technology in our classroom

Lesson plan

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Lesson 1: Technology in our classroom

Unit introduction

Using the slide deck, explain to learners during this unit they will look at lots of different technology, along with improving their keyboard and mouse skills. They will also make sure they are using technology safely.

Introduction

Technology is all around us, and we use it regularly throughout daily life. In this lesson, learners will become familiar with the term 'technology'. Referring to objects in their own school or classroom, they will learn to classify what is and what is not technology, plus they'll practice explaining how it helps us.

Learning objectives

To identify technology
- I can explain technology as something that helps us
- I can locate examples of technology in the classroom
- I can explain how these technology examples help us

Key vocabulary

Individual lesson plan

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Timetabling

Computing is taught in modular blocks.

3 x 1 hour lessons are taught in this cycle

3 x double Art lessons are taught in this cycle

No colour means weekly teaching

Week 1		Week 2		Week 3	
PE	Geography	PE	History	PE	Computing
Music	RE	Music	RE	Music	RE
Geography	PE	History	PE	Computing	PE
Art	Art	Art	Art	Art	Art
Maths	Geography	Maths	History	Maths	Computing

Week 4		Week 5		Week 6	
PE	Geography	PE	History	PE	Computing
Music	RE	Music	RE	Music	RE
Geography	PE	History	PE	Computing	PE
DT	DT	DT	DT	DT	DT
Maths	Geography	Maths	History	Maths	Computing

3 x double DT lessons are taught in this cycle

CUSP
CURRICULUM WITH UNITY SCHOOLS PARTNERSHIP

Afternoon 6 week modular cycle

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Computing and the curriculum

Digital Literacy

A range of hardware and software are regularly planned into lessons in other areas of the curriculum. Laptops, iPads, Chrome Books and interactive whiteboards are all integrated into weekly learning.
Frequently used software tools include Microsoft Excel, Powerpoint and Word as well as now familiar video conferencing software such as Teams and Zoom. Every child has access to Letterjoin, an online handwriting tool, which develops fine motor skills, language and letter formation through online games, quizzes and practice exercises. Keychain introduces a variety of software tools such as Sketchpad, Beebots, Scratch and Turtle Academy which can then be revisited across year groups. Teachers have opportunities to plan in ad hoc Computing skills to increase cross-curricular coverage using any of the above tools or something else that would aid in the learning objective. We are also planning on running a Coding Club to encourage engagement with and development of Computing skills.

At Barrow, we have a digital library system called Librarian using librisoft technology which KS2 children access independently. All our remote learning provision is accessed through Google Classroom where all children have a login and password. Across KS2 we use 'Learning by Questions' to build a picture of where children are working at and to give them the skills and the confidence to move on. Every child from Year 3 to Year 6 has a Times Tables Rockstars account that they can access at home and school to practice their times tables on any device. There are weekly battles among classes to constantly encourage use.

All of the above serve to create a cohort of digitally literate children growing up with technology.

Learning by Questions

Scratch

Star Reading

Accelerated Reader

Letter-join

Times Tables Rockstars

LUNAPIC

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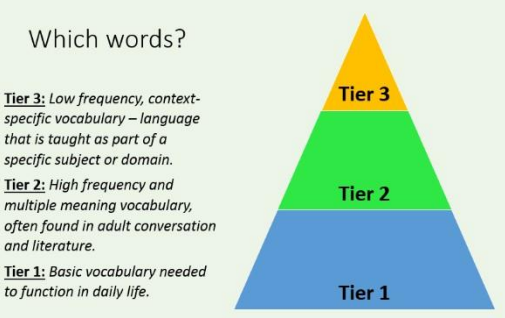
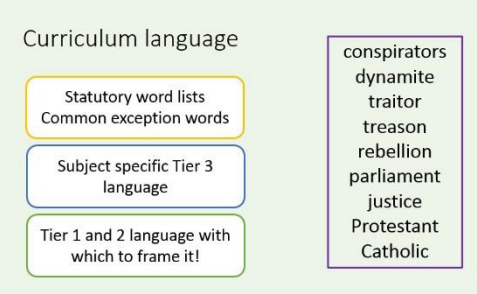
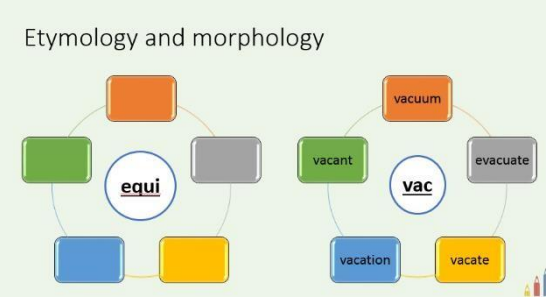
Continuous Professional Development

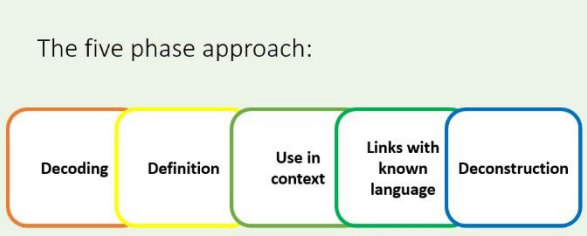
All staff have undergone CPD in Cognitive Load Theory, Spaced Practice Retrieval Theory and planning the wider curriculum which has supported the development of a modular wider curriculum.

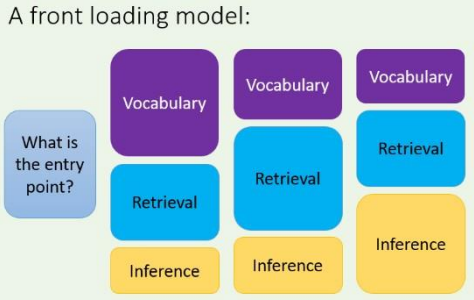
In addition, staff have been trained in the Theory of Reading which emphasises the importance of teaching reading across all subjects and how to teach vocabulary – including etymology and morphology.



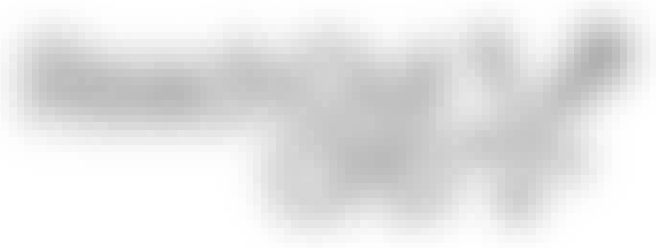








Teachers are encouraged to develop their subject knowledge by accessing resources in school and online. Training has been provided by the Suffolk Computing Hub. Keychain itself features teacher guidance videos in order to upskill practitioners prior to the lesson.



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Assessment

Computing is assessed at the end of each unit (half termly). Each computing lesson is evidenced on Seesaw- a digital platform to save work, videos and voiceovers of children's learning. Enrichment Days like 'Online Safety Day' are also captured on Seesaw.
Teachers will assess each child against our assessment criteria (below) using our whole-school assessment system 'Insight'.

The children are scored on a scale from 0-3
0- Taught but not understood
1- Some evidence but not yet secure
2- Objective secure
3- Working at Greater Depth

Y1 Objectives	Y2 Objectives
☐ Technology Around Us	☐ IT Around Us
☐ Digital Painting	☐ Digital Photography
☐ Digital Writing	☐ Making Music
☐ Grouping Data	☐ Pictograms
☐ Moving Robots	☐ Algorithms
☐ Animation	☐ Quizzes

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Assessment Continued…

Y3 Objectives

- [ ] Connecting Computers
- [ ] Animations
- [ ] Desktop Publishing
- [ ] Branching Databases
- [ ] Sequences
- [ ] Events and Actions

Y4 Objectives

- [ ] The Internet
- [ ] Audio Editing
- [ ] Photo Editing
- [ ] Data Logging
- [ ] Repetition
- [ ] Repetition in Games

Y5 Objectives

- [ ] Sharing Information
- [ ] Vector Drawing
- [ ] Video Editing
- [ ] Databases
- [ ] Selection
- [ ] Selection in Quizzes

Y6 Objectives

- [ ] Communication
- [ ] 3D Modelling
- [ ] Web Pages
- [ ] Spreadsheets
- [ ] Variables
- [ ] Sensing

Characteristics of Greater Depth in computing:

- Children who approach problem solving situations with persistence, resilience and confidence.
- Children who take part in extra-curricular activities inside or outside of school to further strengthen their computing skills. E.g. Touch type, create PowerPoint presentations for the class.
- Children who have a firm grasp of Microsoft products (Word, PowerPoint, Excel etc.) and can use or combine these for a variety of purposes.
- Children who show a comprehensive understanding of coding and can work with various forms of input and output confidently.
- Children who are able to confidently evaluate the validity of a website and can state the source of the information found on the internet.
- Children who know how to navigate the internet safely and effectively and know what a problem looks like and how to report it immediately.
- Children who fully understand, explore and apply skills and ideas in different ways, in different situations and in different subjects.
- Children who can apply their knowledge from other subjects to help them solve technological problems.
- Children who are able to constantly review, analyse and evaluate their work and will make improvements without being asked.

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All classes to have SMART rules displayed and revisited at the beginning of each Computing lesson.