Aldbury C of E Primary & Nursery School
Computing Skills Ladders Year A Year 2022 - 2023

Class 2

Autumn	Spring	Summer
1.1 We are treasure hunters. ● programme robots that can be controlled by inputting a sequence of instructions ● develop and record sequences of instructions as an algorithm ● program a robot to follow their algorithm ● predict how their programs will work ● debug programs. **1.5 We are rhythmic.** ● record audio on a digital device ● program sprites to playback recorded audio in ScratchJr ● program ScratchJr to create repeating rhythms ● explore different effects that can be applied to audio ● create a repeating percussion pattern using a virtual drum machine ● experiment with a range of virtual instruments.	**2.1 We are astronauts** ● plan a sequence of instructions to move sprites in ScratchJr ● create, test and debug programs for sprites in ScratchJr ● work with input and output in ScratchJr ● use repetition in their programs ● design costumes for sprites. **2.2 We are game testers** ● observe and describe carefully what happens in computer games ● use logical reasoning to make predictions of what a program will do and test these ● think critically about computer games ● create sequences of instructions for a virtual robot to solve a problem ● work out strategies for playing a game well ● be aware of how to use games safely and in balance with other activities.	**1.2 We are TV Chefs** ● break down a process into simple, clear steps (an algorithm) ● use different features of a video camera ● use a video camera to capture moving images ● record a video using ground rules for filming ● edit a video to include an audio commentary ● develop collaboration skills ● discuss their work and think about how it could be improved. **2.5 We are animators** ● how animation works ● to use storyboards to plan an animation ● to create their own original characters, props and backgrounds for an animation ● to film, review and edit a stop-motion animation ● to record audio to accompany their animation ● to provide constructively critical feedback to their peers.

CS - Coding
CS-Computational thinking
IT - Media
DL - Online safety
IT - Data
IT - Creativity

Class 3

Autumn	Spring	Summer
3.1 We are programmers ● plan and create an algorithm for an animated scene in the form of a storyboard ● write a program in Scratch to create the animation, including characters, dialogue, costumes, backdrops and sound ● review their animation programs and correct mistakes. **3.2 We are bug fixers** ● develop a number of strategies for finding errors in programs ● build up resilience and strategies for problem solving ● increase their knowledge and understanding of Scratch ● recognise a number of common types of bugs in software.	**4.1 We are software developers** ● develop an educational computer game using selection and repetition ● understand and use variables ● start to debug computer programs ● recognise the importance of user interface design, including consideration of input and output. **4.2 We are makers** ● about the input – process – output model of computation ● about the inputs and outputs available on a BBC micro:bit ● to program using the MakeCode blockbased environment ● to test and debug programs they write, using an on-screen simulator and the micro:bit ● how to convert and transfer a program written on screen to the micro:bit.	**4.5 We are artists** ● develop an appreciation of the links between geometry and art ● become familiar with the tools and techniques of a vector graphics package ● develop an understanding of turtle graphics ● experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it, and receive feedback from their peers ● develop some awareness of computer-generated art. **4.4 We are bloggers** ● become familiar with blogs as a medium and a genre of writing ● create a sequence of blog posts on a theme ● incorporate additional media ● comment on the posts of others ● develop a critical, reflective view of a range of media, including text.

CS - Coding
CS-Computational thinking
IT - Media
DL - Online safety
IT - Data
IT - Creativity

Class 4

Autumn	Spring	Summer
5.3 We are architects ● understand the work of architects, designers and engineers working in 3-D ● develop familiarity with a simple CAD tool ● develop spatial awareness by exploring and experimenting with a 3-D virtual environment ● develop greater aesthetic awareness. **5.6 We are VR designers** ● explore real-world and imagined locations in VR ● create 360° photosphere images ● link physical objects to digital content using QR codes ● create their own VR scene ● program objects and interactions in VR.	**5.5 We are adventure games** ● how to plan a non-linear presentation ● to create text as part of a presentation ● to add and edit images in a presentation ● to use hyperlinks for navigation between the slides of a presentation ● to record and add audio narration to a presentation ● to use commenting tools to give feedback on a presentation. **6.1 We are toy makers** ● how computers use stored programs to connect input to output ● how to generate and evaluate designs in response to a brief ● to plan a complex project by decomposing it into smaller parts ● to work with physical components of a system ● how to design and write a program for an embedded system ● to use criteria to provide others with feedback on their work.	**6.5 We are advertisers** ● think critically about how video is used to promote a cause ● storyboard an effective advert for a cause ● work collaboratively to shoot original footage and source additional content ● acknowledge intellectual property rights ● work collaboratively to edit the assembled content to make an effective advert. **6.6 We are AI developers** ● how decision trees can be trained automatically to classify data ● how speech recognition works ● how a neural net recognises images ● to train a neural net to classify images ● to train a machine learning system to identify sentiments ● to consider some ethical principles in designing AI systems.

CS - Coding
CS-Computational thinking
IT - Media
DL - Online safety
IT - Data
IT - Creativity

Aldbury C of E Primary & Nursery School
Computing Skills Ladders Year B Year 2021 - 2022

Class 2

Autumn

1.3 We are digital artists

- how to select and set brushes and colours
- to create artwork in a range of styles on iPads
- to use the undo function if they make mistakes and to encourage experimentation
- to use multiple layers in their art
- to transform layers
- to paint on top of photographs.

2.3 We are photographers

- consider the technical and artistic merits of photographs
- use the iPad camera app
- take digital photographs
- review, reject or pick the images they take
- edit and enhance their photographs.

Spring

1.6 We are detectives

- how data can be structured as records with fields for information
- how data can be organised into groups and subgroups
- how data can be structured as a tree
- how data can be organised into a table
- how data in a table can be filtered and searched.

2.6 We are zoologists

- sort and classify a group of items by answering questions
- collect data using tick or tally charts
- take, edit and enhance photographs
- use Google Sheets or Microsoft Excel to produce basic charts
- record information on a digital map
- summarise what they have learned in a presentation.

Summer

1.4 We are publishers

- plan a small multimedia eBook
- choose and import images
- record audio commentary
- add and format titles and other text
- think carefully about protecting their privacy
- respect other people's copyright
- revise and improve their work.

2.4 We are safe researchers

- develop collaboration skills through working as part of a group
- develop research skills through searching for information on the Internet
- think through privacy implications of their use of search engines
- be more discerning in evaluating online information
- improve note-taking skills through the use of mind mapping
- develop presentation skills through creating and delivering a multimedia presentation.

CS - Coding
CS-Computational thinking
IT - Media
DL - Online safety
IT - Data
IT - Creativity

Class 3

Autumn	Spring	Summer
3.3 We are presenters ● develop their web-based research skills ● structure, prepare and deliver a talk about a given topic or subtopic studied in another curriculum area ● record a piece to camera ● edit a movie using static images and green screen footage ● give constructive, critical feedback on recorded presentations. **3.4 We are who we are** ● create a number of structured presentations ● create a narrated presentation ● consider issues of trust and privacy when sharing information.	**3.5 We are co authors** ● understand the conventions for collaborative online work, particularly in wikis ● be aware of their responsibilities when editing other people's work ● become familiar with Wikipedia, including potential problems associated with its use ● practise their research skills ● write for a target audience using a wiki tool ● develop collaboration skills ● develop proofreading skills. **4.3 We are musicians** ● create a repeating percussion rhythm ● play music using virtual instruments ● compose or edit tunes using the piano roll (pitch and duration) tool ● perform electronic music using pre-recorded loops, and create their own loops ● create a multi-track composition or performance using multiple instruments ● give feedback to others on their compositions and performances.	**3.6 We are opinion pollsters** ● understand some elements of survey design ● understand some ethical and legal aspects of online data collection ● use the Internet to facilitate data collection ● gain skills in using charts to analyse data ● gain skills in interpreting results. **4.6 We are meteorologists** ● understand different measurement techniques for weather – both analogue and digital ● use computer-based data logging to automate the recording of some weather data ● use spreadsheets to create charts ● analyse data, explore inconsistencies in data and make predictions ● practise using presentation and video software.

CS - Coding
CS-Computational thinking
IT - Media
DL - Online safety
IT - Data
IT - Creativity

Class 4

Autumn	Spring	Summer
5.1 We are developers ● create original artwork and sound for a game ● design and create a computer program for a computer game, which uses sequence, selection, repetition and variables ● detect and correct errors in their games ● use iterative development techniques. **5.2 We are cryptographers** ● be familiar with semaphore and Morse code ● understand the need for private information to be encrypted ● encrypt and decrypt messages in simple ciphers ● appreciate the need to use complex passwords and to keep them secure ● have some understanding of how encryption works on the Internet.	**5.4 We are web developers** ● the name and function of components making up the school's network ● how information is passed between the components that make up the Internet ● what the source code for a web page looks like and how it can be edited ● how a website can be structured ● how to add content to a web page. **6.2 We are computational thinkers** ● develop the ability to reason logically about algorithms ● understand how some key algorithms can be expressed as programs ● understand that some algorithms are more efficient than others for the same problem ● understand common algorithms for searching and sorting a list.	**6.3 We are connected** ● about appropriate rules or guidelines for a civil online discussion ● how search results are selected and ranked ● how to argue their point effectively, supporting their views with sources ● how to counter someone else's argument while showing respect and tolerance ● how to judge the reliability of an online source ● some strategies for dealing with online bullying. **6.4 We are publishers** ● manage or contribute to large collaborative projects, facilitated using online tools ● write and review content ● source digital media while demonstrating safe, respectful and responsible use ● design and produce a high-quality print document.

CS - Coding
CS-Computational thinking
IT - Media
DL - Online safety
IT - Data
IT - Creativity