

Ludlow Junior School



Computing Curriculum



Computing

Intent

Through computing at Ludlow Junior School, we encourage children to 'dream big' and become confident, innovative learners through an ambitious and relevant curriculum design. We want to equip pupils to use computational thinking and creativity that enables them to become active participants in an ever-changing technological world.

Our aim is to provide a computing curriculum that is designed to balance acquiring a broad and deep knowledge alongside opportunities to applying skills in various digital concepts. Beyond teaching computing in the curriculum, pupils are given the opportunity to apply and demonstrate what they have learnt across many subjects using technology to showcase this.

Whilst ensuring that pupils understand the advantages and disadvantages associated with online experiences, we want our children to develop into responsible, respectful users of technology, who are aware of measures that can be taken to keep themselves and others safe online.

It is our intention that pupils at Ludlow Junior School are able to navigate and use a range of programs and devices to enrich their learning across the curriculum. By the end of year 6, pupils at Ludlow should be prepared for their next stage in their computing education and be able to use the skills and knowledge they have learnt in KS2 to support them with accessing the wider curriculum.



Computing

Implementation

Our computing scheme of work is adapted from the 'Teach Computing' curriculum and covers all aspects of the national curriculum. The Teach Computing scheme of work has been created by subject experts and is based on the latest pedagogical research. It ensures progression of skill and knowledge across the year groups, with units that are built upon in the following years through a spiral curriculum.

The curriculum aims to equip young people with the knowledge, skills and understanding they need to thrive in the digital world of today and the future. The curriculum can be compartmentalised into three key strands: computer science, information technology and digital literacy, in line with the national curriculum aims.

The national curriculum for computing aims to ensure all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation (Computer science)
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems (Computer science)
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems (Information technology)
- are responsible, competent, confident and creative users of information and communication technology. (Digital literacy)



Computing—Long term overview

Computing across the school is mapped out carefully based on the National Curriculum Programme of Study. At Ludlow, we have implemented the Teach Computing curriculum. We have developed a three-year plan to ensure that the curriculum is fully adapted to the needs of our pupils, plugging any gaps in pupil learning. Where appropriate, links are made to other areas of the curriculum.

Whole-school computing curriculum overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	Connecting computers	Stop-frame animation	Sequencing sounds	Branching databases	Desktop publish	Events and action in programs
Cross-curricular link		English—Charlotte's Web	Music— instruments	Geography— human/physical features for different regions	History— Egyptians	DT—Pneumatics
Year 4	The internet	Data logging	Repetition in shapes	Audio production	Photo editing	Repetition in games
Cross-curricular link	History— Romans	Science— recording data	Maths	History— Anglo-Saxons and Vikings		DT—board games
Year 5	Systems and searching	Vector graphics	Video production	Flat-file databases	Selection in physical computing	Selection in quizzes
Cross-curricular link	History—	DT—Designing phone cases	History— Ancient Greece	Science— Changing states	DT—Making toys	Maths
Year 6	Communication and collaboration	Web page creation	Variables in games	Spreadsheets	3D Modelling	Sensing movement
Cross-curricular link	History—WW2	History—WW2	PE	PSHE— Enterprise	DT— Fairgrounds	Science— Animals including humans



Year 3/4 skill progression

Year 3

3.1 Connecting Computers	3.2 Stop-Frame Animation	3.3 Sequencing sounds	3.4 Branching Databases	3.5 Desktop Publishing	3.6 Events and actions in programs
I can: - explain how digital devices function. - identify input and output devices. - recognise how digital devices change the way we work. - explain how a computer network can be used to share information. - explore how digital devices can be connected. - recognise the physical components of a network.	I can: - explain that animation is a sequence of drawings or photographs. - relate animated movement with a sequence of images. - plan an animation. - identify the need to work consistently and carefully. - review and improve an animation. - evaluate the impact of adding other media to an animation.	I can: - explore a new programming environment. - identify that each sprite is controlled by the commands I choose. - explain that a program has a start. - recognise that a sequence of commands can have an order. - change the appearance of my project. - create a project from a task description.	I can: - create questions with yes/no answers. - identify the object attributes needed to collect relevant data. - create a branching database. - identify objects using a branching database. - explain why it is helpful for a database to be well structured. - compare the information shown in a pictogram with a branching database.	I can: - recognise how text and images convey information. - recognise that text and layout can be edited. - choose appropriate page settings. - add content to a desktop publishing publication. - consider how different layouts can suit different purposes. - consider the benefits of desktop publishing.	I can: - explain how a sprite moves in an existing project. - create a program to move a sprite in four directions. - adapt a program to a new context. - develop my program by adding features. - identify and fix bugs in a program. - design and create a maze-based challenge.

Year 4

4.1 The internet	4.2 Audio Production	4.3 Repetition in Shapes	4.4 Data Logging	4.5 Photo Editing	4.6 Repetition in games
I can: - describe how networks physically connect to other networks. - recognise how networked devices make up the internet. - outline how websites can be shared via the World Wide Web. - describe how content can be added and accessed on the World Wide Web. - recognise how the content of the WWW is created by people. - evaluate the consequences of unreliable content.	I can: - identify that sound can be digitally recorded. - to use a digital device to record sound. - explain that a digital recording is stored as a file. - explain that audio can be changed through editing. - show that different types of audio can be combined and played together. - evaluate editing choices made.	I can: - identify that accuracy in programming is important. - create a program in a text-based language. - explain what 'repeat' means. - modify a count-controlled loop to produce a given outcome. - decompose a program into parts. - create a program that uses count-controlled loops to produce a given outcome.	I can: - explain that data gathered over time can be used to answer questions. - use a digital device to collect data automatically. - explain that a data logger collects 'data points' from sensors over time. - use data collected over a long duration to find information. - identify the data needed to answer questions. - use collected data to answer questions.	I can: - explain that digital images can be changed. - change the composition of an image. - describe how images can be changed for different uses. - make good choices when selecting different tools. - recognise that not all images are real. - evaluate how changes can improve an image.	I can: - develop the use of count-controlled loops in a different programming environment. - explain that in programming there are infinite loops and count controlled loops. - develop a design which includes two or more loops which run at the same time. - modify an infinite loop in a given program. - design a project that includes repetition. - create a project that includes repetition.



Year 5/6 skill progression

Year 5

5.1 Systems and Sequencing	5.2 Video Production	5.3 Selection in physical computing	5.4 Flat-file databases	5.5 Introduction to vector graphics	5.6 Selection in quizzes
I can: - explain that computers can be connected to form systems. - recognise the role of computer systems in our lives. - recognise how information is transferred over the internet. - explain how sharing information online lets people in different places work together. - contribute to a shared project online. - evaluate different ways of working together online.	I can: - recognise video as moving pictures, which can include audio. - identify digital devices that can record video. - capture video using a digital device. - recognise the features of an effective video. - identify that video can be improved through reshooting and editing. - consider the impact of the choices made when making and sharing a video.	I can: - control a simple circuit connected to a computer. - write a program that includes count-controlled loops. - explain that a loop can stop when a condition is met, <u>eg</u> number of times. - conclude that a loop can be used to repeatedly check whether a condition has been met. - design a physical project that includes selection. - create a controllable system that includes selection.	I can: - use a form to record information. - compare paper and computer-based databases. - outline how grouping and then sorting data allows us to answer questions. - explain that tools can be used to select specific data. - explain that computer programs can be used to compare data visually. - apply my knowledge of a database to ask and answer real-world questions.	I can: - identify that drawing tools can be used to produce different outcomes. - create a vector drawing by combining shapes. - use tools to achieve a desired effect. - recognise that vector drawings consist of layers. - group objects to make them easier to work with. - evaluate my vector drawing.	I can: - explain how selection is used in computer programs. - relate that a conditional statement connects a condition to an outcome. - explain how selection directs the flow of a program. - design a program which uses selection. - create a program which uses selection. - evaluate my program.

Year 6:

6.1 Communication and collaboration	6.2 Webpage creation	6.3 Variables in games	6.4 Introduction to spreadsheets	6.5 3D Modelling	6.6 Sensing movement
I can: - identify how to use a search engine. - describe how search engines select result. - describe how search engines select results. - explain how search results are ranked. - recognise why the order of results is important, and to whom. - recognise how <u>we communicate</u> using technology. - evaluate different methods of online communication.	I can: - review an existing website and consider its structure. - plan the features of a web page. - consider the ownership and use of images (copyright). - recognise the need to preview pages. - outline the need for a navigation path. - recognise the implications of linking to content owned by other people.	I can: - define a 'variable' as something that is changeable. - explain why a variable is used in a program. - choose how to improve a game by using variables. - design a project that builds on a given example. - use my design to create a project. - evaluate my project.	I can: - identify questions which can be answered using data. - explain that objects can be described using data. - explain that formula can be used to produce calculated data. - apply formulas to data, including duplicating. - create a spreadsheet to plan an event. - choose suitable ways to present data.	I can: - use a computer to create and manipulate three-dimensional (3D) digital objects. - compare working digitally with 2D and 3D graphics. - construct a digital 3D model of a physical object. - identify that physical objects can be broken down into a collection of 3D shapes. - design a digital model by combining 3D objects. - develop and improve a digital 3D model.	I can: - create a program to run on a controllable device. - explain that selection can control the flow of a program. - update a variable with a user input. - use <u>an</u> conditional statement to compare a variable to a value. - design a project that uses inputs and outputs on a controllable device. - develop a program to use inputs and outputs on a controllable device.



Online Safety

Online Safety at Ludlow

The safety of our pupils is paramount and this is an integral part of our computing curriculum. Online safety is incredibly important in the society we live in today. We provide children with the necessary skills to keep themselves safe online.

Our Online Safety curriculum is underpinned by the 'Education for a Connected World' framework and we use 'Project Evolve' to support this. The framework aims to support and broaden the provision of online safety education, so that it is empowering, builds resilience and effects positive culture of change. The objectives promote the development of safe and appropriate long-term behaviours, and support educators in shaping the culture within their setting and beyond.



Self Image and Identity - This strand explores the differences between online and offline identity beginning with self-awareness, shaping online identities and media influence in propagating stereotypes. It identifies effective routes for reporting and support and explores the impact of online technologies on self-image and behaviour.

Online Relationships - This strand explores how technology shapes communication styles and identifies strategies for positive relationships in online communities. It offers opportunities to discuss relationships, respecting, giving and denying consent and behaviours that may lead to harm and how positive online interaction can empower and amplify voice.

Online Reputation - This strand explores the concept of reputation and how others may use online information to make judgements. It offers opportunities to develop strategies to manage personal digital content effectively and capitalise on technology's capacity to create effective positive profiles.

Online Bullying - This strand explores bullying and other online aggression and how technology impacts those issues. It offers strategies for effective reporting and intervention and considers how bullying and other aggressive behaviour relates to legislation.

Managing Online information - This strand explores how online information is found, viewed and interpreted. It offers strategies for effective searching, critical evaluation of data, the recognition of risks and the management of online threats and challenges. It explores how online threats can pose risks to our physical safety as well as online safety. It also covers learning relevant to ethical publishing.

Health Well-being and Lifestyle - This strand explores the impact that technology has on health, well-being and lifestyle e.g. mood, sleep, body health and relationships. It also includes understanding negative behaviours and issues amplified and sustained by online technologies and the strategies for dealing with them.

Privacy and Security - This strand explores how personal online information can be used, stored, processed and shared. It offers both behavioural and technical strategies to limit impact on privacy and protect data and systems against compromise.

Copyright and Ownership - This strand explores the concept of ownership of online content. It explores strategies for protecting personal content and crediting the rights of others as well as addressing potential consequences of illegal access, download and distribution.

Whole school computing overview with online safety links mapped out.

Term	Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
	Connecting computers		Stop-Frame animation		Sequencing Sounds		Branching Databases		Desktop publishing		Events and actions	
	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links
Year 3	Health, well-being and Privacy and security		Copyright and ownership	English - Charlotte's Web	Self image and identity	Music - Instruments	Self image and identity, Health, well-being and lifestyle	Geography - human/physical features for different regions	Online relationships, Managing online information	History - Egyptians	Online reputation	DT - Pneumatics
Year 4	The Internet		Data logging		Repetition in Shapes		Audio Production		Photo editing		Repetition in games	
	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links
	Managing online information, Privacy and security	History - Egyptians	Health, well-being and lifestyle, Copyright and ownership	Science - Recording Data	Privacy and security	Maths	Self image and identity	History - Anglo-Saxons and Vikings	Online relationships, Online bullying		Online reputation	DT - Board Games
Year 5	Systems and searching		Vector Graphics		Video Production		Flat-File Databases		Selection in physical		Selection in quizzes	
	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links
	Managing online information	Geography - UK and Western USA	Privacy and security	DT - Designing phone cases	Online relationships, Online reputation	History - Ancient Greece	Health, well-being and lifestyle	Science - Changing states		DT - Moving Toys		Maths
Year 6	Communication and		Webpage creation		Variables in games		Spreadsheets		3D Modelling		Sensing movement	
	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links	evolve	Cross-Curricular Links
	Copyright and ownership, Privacy and security	History - WW2	Managing online information	History - WW2	Online reputation, Health, well-being and lifestyle	PE?	Self image and identity, Online reputation	PSHE - Enterprise	Online relationships, Online bullying	DT - Fairgrounds		Science - Animals including humans (pedometer and heart rate)

Snippet of Year 3 Online Safety mapping alongside PSHE curriculum / interweaved within lessons.

Project Evolve Strand	Lesson objective - I can statement	Term	Unit link	Method of delivery	Where can I find the resource
1 - Self image and identity	I can explain what is meant by the term 'identity' and I can explain how I can represent myself in different ways online.	Spring 1	Discrete / PSHE	Standalone	Search and Access Resources - Year Group - Year Three - Self-Image and Identity (projectevolve.co.uk)
1 - Self image and identity	I can explain ways in which and why I might change my identity depending on what I am doing online (e.g. gaming; using an avatar; social media).	Spring 1	Discrete / PSHE	Standalone	Search and Access Resources - Year Group - Year Three - Self-Image and Identity (projectevolve.co.uk)
2 - Online relationships	I can describe ways people who have similar likes and interests can get together online.	Summer 1	PSHE - making friends online	As part of the PSHE curriculum	
2 - Online relationships	I can explain how my and other people's feelings can be hurt by what is said or written online and how this may be communicated (e.g. emojis, acronyms, text speak).	Summer 1	PSHE - making friends online	As part of the PSHE curriculum	Google Internet Legends - Be Internet Sharp, Google Internet Legends - Be Internet Kind
2 - Online relationships	I can explain why I can take back my trust in someone or something if I feel nervous, uncomfortable or worried.	Summer 1	PSHE - making friends online	As part of the PSHE curriculum	
2 - Online relationships	I can explain what it means to 'know someone' online and why this might be different from knowing someone in real life and the risks of communicating online with others I don't know well.	Summer 1	PSHE - making friends online	As part of the PSHE curriculum	

Safer Internet Day 2024—Tuesday 6th February 2024



Welcome to Ludlow's Safer Internet Day 2024 Parent Briefing



Housekeeping – Please can you make sure that you are on mute and that your camera is off.

Tuesday 6th February 2024

If you have any questions at all throughout the briefing, please feel free to write them in the chat.

We will be making an FAQ document that will be sent out to you following tonight's Safer Internet briefing.

We will aim to
start promptly
at 5:30.

On Safer Internet Day, the Computing lead, led training for parents on keeping their child safe online.

A pupil voice survey was conducted during the Autumn term of 2023-2024, to identify key online safety areas that were most relevant to our pupils and the school's context. The parent briefings were tailored based on this feedback to address, signpost and inform parents about risks associated with pupil use of software online.

On Safer Internet Day, teachers delivered lessons dedicated to key areas that were highlighted as a result of the pupil voice survey, tailoring this for lower school (years 3 and 4) and upper school (year 5 and 6) based on the feedback.



Computing

Impact

Computing education at Ludlow has a transformative impact on students, equipping them with essential skills for the digital age. Through a comprehensive curriculum that emphasises digital literacy, critical thinking and coding.

Integrating computing into subjects across the curriculum enhances engagement, deepens understanding and makes learning more dynamic and relevant. Ultimately, our computing curriculum empowers students to navigate and contribute to an increasingly digital world with confidence and competence.

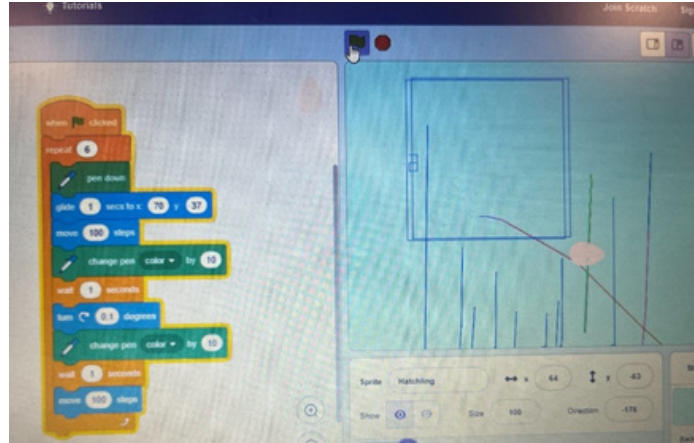
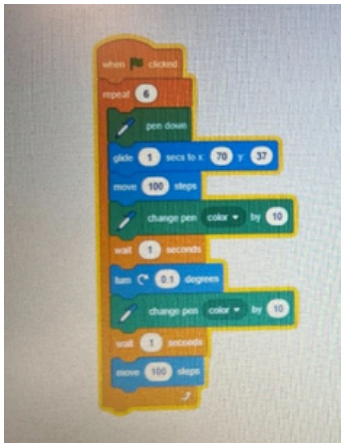
By the time pupils leave Ludlow at the end of year 6, they are aware of how to be safe, responsible users of information technology. Pupils know what to do if they encounter issues online.



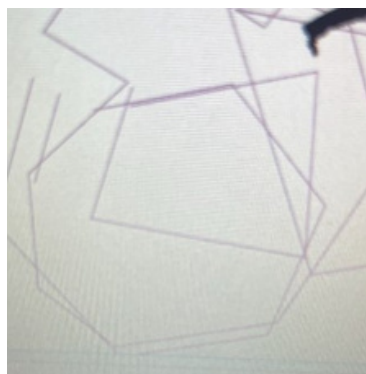
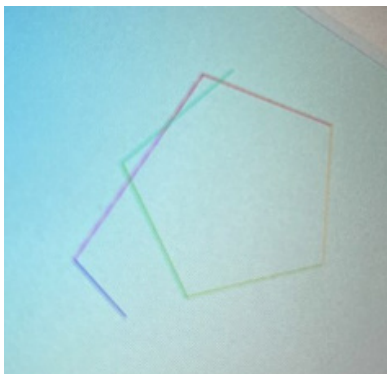
Computing

Evidence of impact

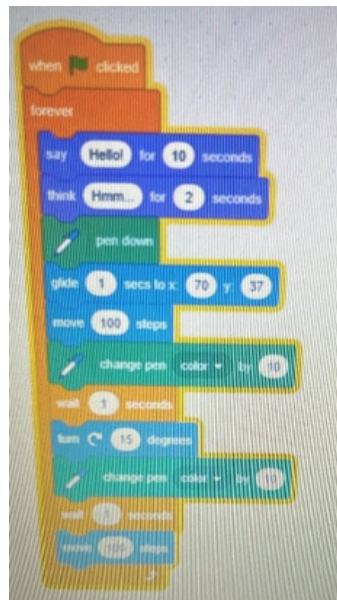
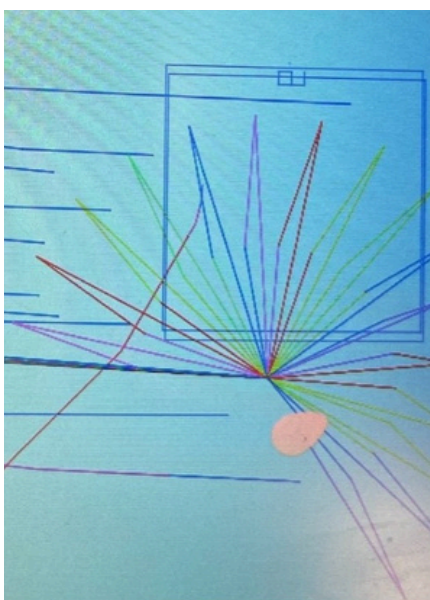
Drawing lines and making patterns using programmed sprites



Adjusting degrees of turns in order to create different shapes



Using repeat and forever loops to create patterns





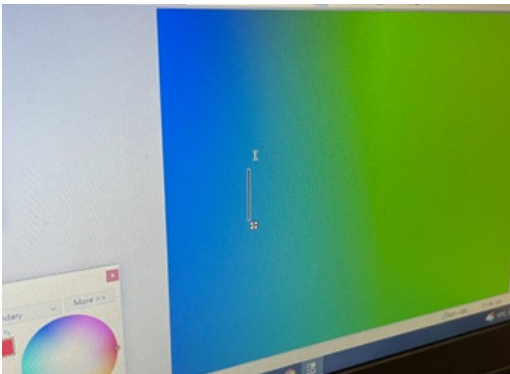
Computing

Evidence of impact

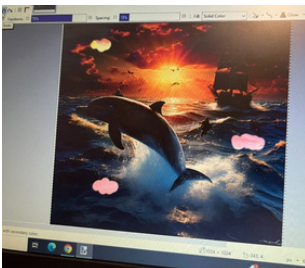
Year 4 - Photo editing

Rotating and adjusting images and changing colour settings

Adding gradients to backgrounds and exploring layers on paint



Using brush tool to make colour changes and adding text to images



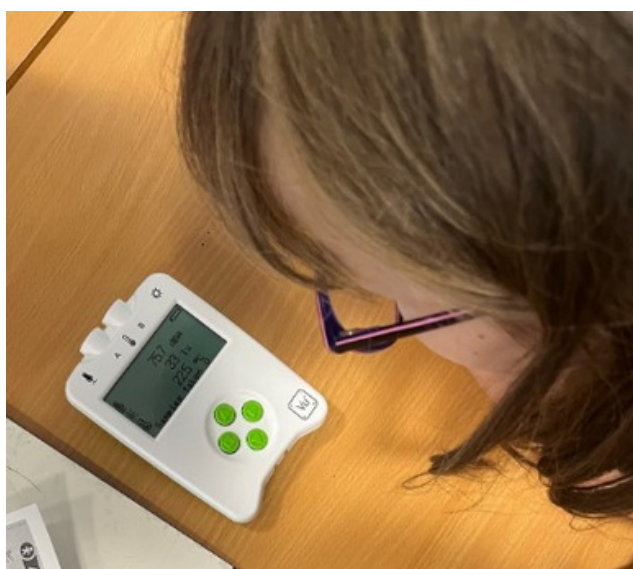


Computing

Evidence of impact

Data logging

Using data loggers to explore temperature, light and sound in different locations around the school.



Spreadsheets—learning how to use formula and sums.

F7			$\times$	$\checkmark$	f_x	=D7*E7
	B	C	D	E	F	
1	Location	Travel duration	Distance in miles	Cost per mile	Journey cost	
2	Staffordshire	1:47:00	86.1	£0.12	£10.33	
3	Watford	3:24:00	207	£0.12	£24.84	
4	Leicester	2:22:00	130	£0.12	£15.60	
5	Westminster	4:00:00	232	£0.12	£27.84	
6	London	3:56:00	233	£0.12	£27.96	
7	Windsor	3:39:00	218	£0.12	£26.16	
8	Edinburgh	4:00:00	228	£0.12	£27.36	
9	Brighton	4:41:00	283	£0.12	£33.96	
10	Poole	4:34:00	276	£0.12	£33.12	
11	Yorkshire	1:42:00	77.2	£0.12	£9.26	



Computing

Pupil Voice

Responses

200



What are your views on Computing at Ludlow?

200 Responses

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

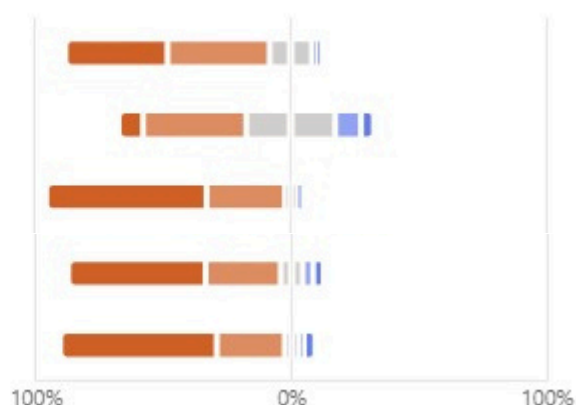
I enjoy computing at school.

I can talk about what I have learnt in computing this year.

My school teaches me how to stay safe online.

I know what to do if I see something that bothers or upsets me online.

I know who to talk to if something online worries me at school or at home.



Which subjects have you used Computing in? (Tick all that apply)

200 Responses

History	67
Geography	58
Maths	73
Science	32
RE	41
French	10
PE	6
DT	97
Art	49
Music	25

