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Digital Literacy Curriculum Intent

Year 9

The Year 9 Digital Literacy curriculum represents the final stage of students' KS3 journey, building upon the knowledge and practical skills developed throughout Years 7 and 8 and moving towards greater independence, technical confidence and problem solving. Students are encouraged to think increasingly like computer scientists, designers and digital creators, applying their knowledge to more complex and purposeful projects.

Across the year, students explore network infrastructure and cloud systems, cybersecurity and system vulnerabilities, big data and automation, UI/UX and application design, interactive digital media, and physical computing. They learn how data travels through connected networks, how digital systems can be protected, how data can automate decisions and how digital products are designed around the needs of users. Students also develop their creative and technical skills through interactive media before bringing their KS3 learning together within an independent physical computing project and technical portfolio.

Practical application remains central to the curriculum. Students create network diagrams, investigate security problems, build increasingly complex spreadsheet models, design and test digital prototypes, manage interactive media assets and develop event-driven physical computing solutions. Across each project, students are expected to plan, create, test, debug, refine and evaluate their work while using increasingly accurate subject-specific vocabulary.

Year 9 also prepares students for the greater independence required at KS4. Through the department's focus on Planning, Technical Application, Problem Solving and Reflection, students learn to manage larger digital projects, respond to problems and explain the decisions they have made. The curriculum provides a strong foundation for subjects including Computer Science, Business and Media Studies, while developing transferable digital skills that students can apply across the wider curriculum and beyond school.

Topic 1
Enquiry

How does data travel across a connected world?

Big Picture
What are the main ideas and big questions in this topic?

tudents begin Year 9 by developing a deeper understanding of how computer networks allow devices, people, and organisations to communicate across local and global systems. They explore the difference between LANs and WANs, how client-server networks operate, and how data travels across the internet.

The enquiry introduces students to network infrastructure, data packets, routing, and cloud systems. Students begin to think like network engineers, interpreting how different parts of a digital system connect and work together.

Through practical network mapping and technical explanation, students develop increasingly confident use of specialist vocabulary while recognising how modern communication depends upon complex digital infrastructure.

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Zoom In

What knowledge, skills and key vocabulary will we learn step by step?

Students explore the difference between Local Area Networks (LANs) and Wide Area Networks (WANs) and investigate how networks connect devices and allow information to be shared.

They develop an understanding of client-server networks and investigate how data is divided into packets and routed across connected systems. Students also explore how cloud systems allow information and services to be accessed remotely.

Students create and interpret network diagrams, tracing how data travels through different parts of a system and explaining how network components connect together. More confident students make links between network topology, packet transmission, routing, and cloud processing.

Throughout the enquiry students develop confidence using technical vocabulary including network, LAN, WAN, topology, client, server, packet, routing, transmission, cloud, infrastructure, and protocol.

The enquiry is structured around a sequence of focused questions including:

- What is a computer network?
- What is the difference between a LAN and a WAN?
- How do client-server networks work?
- How does data travel across the internet?
- What happens to data when it is stored in the cloud?
- How can network diagrams help us understand digital systems?

Pre-Requisite Knowledge

What have we already learned that will help us with this topic?

Students build upon their Year 7 understanding of computer systems, digital communication, cybersecurity, privacy, and data protection and their Year 8 work on protecting digital systems from cyber threats.

They should already understand that digital systems connect devices and information. Year 9 extends this by exploring the larger network infrastructure that allows data to move between local and global systems.

Pitch Up

How will we challenge ourselves?

Students are challenged to move beyond identifying network components and begin explaining how different parts of a network work together.

More confident students create their own network diagrams and explain links between LANs, WANs, data packets, routing, and cloud systems. They are expected to justify their network choices and communicate increasingly complex technical processes clearly.

Throughout the project students continue to develop their ability to “Say it Better” by using accurate technical vocabulary when explaining network systems.

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Wider Framework
How does this learning connect to future topics and bigger goals?

This enquiry provides an important foundation for the next Year 9 topic on system vulnerabilities and cybersecurity. Students need to understand how networks operate before they can investigate where vulnerabilities may occur and how networks can be protected.

The project also supports future learning in Computer Science and other technology-based subjects where students are expected to understand connected systems, work independently, and communicate technical ideas accurately.

Curriculum Hinterland
What wider knowledge will deepen our understanding of this topic?

Students explore how modern society depends upon global network infrastructure. They consider how the internet connects people across countries and continents and how cloud systems allow information to be accessed from different locations.

Students also consider the digital divide, recognising that access to reliable networks and digital infrastructure is not equal everywhere. This helps students understand that technology is influenced by geography, economics, and wider society.

Authentic connections
How does this topic connect to real life, careers, other subjects and important values?

Students explore how networks support communication, education, business, healthcare, and public services. They develop an understanding of how dependent modern society has become upon reliable digital infrastructure and why access to technology can affect opportunities.

There are strong links with Geography through global connectivity and the digital divide, Mathematics through logical systems and network structures, and Design Technology through understanding how physical and digital systems work together.

Careers Framework Skills: Problem Solving, Planning and Teamwork
Students develop Problem Solving through tracing how data moves through connected systems. Planning develops through creating clear network diagrams, while Teamwork develops through collaborative network mapping and technical discussion.

Careers: Network Engineer, Cloud Support Engineer and Network Operations Technician
A Network Engineer designs and maintains computer networks. A Cloud Support Engineer helps organisations manage cloud-based systems, while a Network Operations Technician monitors networks and helps keep digital services working reliably.

Resources
What books, websites, videos and materials will support our learning?

- Cisco Networking Academy
- NCSC CyberFirst resources
- Network mapping and diagramming activities
- Teacher-led network simulations
- Year 9 Digital Literacy Knowledge Organiser
- Department Digital Deep-Dive and “Say it Better” activities.

Assessment
How will we show what we know, remember and can apply?

Students complete practical and written tasks requiring them to interpret and create network diagrams, explain how data travels across networks, and use accurate technical vocabulary.

Approximately 50% of assessment focuses on substantive knowledge, including networks, LANs, WANs, packets, routing, client-server systems, and cloud

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	infrastructure. 50% focuses on disciplinary knowledge through systems thinking, technical explanation, problem solving, and practical network modelling.

Term 2
Enquiry

How can we find and fix weaknesses in digital systems?

Big Picture
What are the main ideas and big questions in this topic?

Students build upon their Year 8 cybersecurity knowledge and their Term 1 understanding of network infrastructure to investigate system vulnerabilities and network defence.

They explore how weaknesses within digital systems can be identified and consider how cybersecurity professionals test systems ethically to improve security. Students investigate ransomware, encryption and penetration testing, developing a deeper understanding of how organisations protect important data and infrastructure.

The enquiry encourages students to think like network defenders, analysing risks and considering both the technical and ethical responsibilities involved in cybersecurity.

Zoom In
What knowledge, skills and key vocabulary will we learn step by step?

Students investigate what a system vulnerability is and how weaknesses within networks and digital systems can create security risks.

They explore penetration testing and the difference between ethical security testing and malicious hacking. Students consider how cybersecurity professionals identify vulnerabilities and recommend ways of reducing risk.

Students investigate how ransomware attacks operate and how encryption can be used both to protect information and, in the case of ransomware, prevent legitimate users from accessing their own data.

Students also consider the importance of data privacy, GDPR and responsible security testing, recognising that cybersecurity involves legal and ethical responsibilities as well as technical knowledge.

Throughout the enquiry students develop confidence using technical vocabulary including vulnerability, penetration testing, ethical hacking, ransomware, encryption, exploit, security, patch, privacy, GDPR, white-hat and black-hat.

The enquiry is structured around a sequence of focused questions including:

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- What makes a digital system vulnerable?
- How do cybersecurity professionals test systems safely?
- What is the difference between ethical and malicious hacking?
- How does ransomware attack a digital system?
- Why is encryption important?
- How can vulnerabilities be reduced or patched?

Pre-Requisite Knowledge

What have we already learned that will help us with this topic?

Students build directly upon their Year 8 study of malware, phishing, social engineering, cyber attacks and defensive strategies. They already understand that both technical weaknesses and human behaviour can create cybersecurity risks.

Term 1 Year 9 learning also supports this enquiry because students now understand how networks, data packets, routing and connected systems operate. This allows them to investigate more confidently where vulnerabilities might occur.

Pitch Up

How will we challenge ourselves?

Students are challenged to move beyond identifying cyber threats and begin analysing why vulnerabilities occur and how they could be reduced.

More confident students evaluate different security responses and explain how encryption, vulnerability testing and patching can improve the security of digital systems.

Students continue to develop their ability to "Say it Better" by using precise technical vocabulary when explaining cybersecurity processes and justifying security decisions.

Wider Framework

How does this learning connect to future topics and bigger goals?

This enquiry develops the cybersecurity and problem-solving skills students will need for future study in Digital Literacy, Computer Science and other technology-based subjects.

Students develop greater independence in analysing technical problems and evaluating possible solutions, supporting the Year 9 progression towards more complex project work at KS4.

Curriculum Hinterland

What wider knowledge will deepen our understanding of this topic?

Students investigate how cybersecurity threats can affect much more than individual computers. Ransomware and security vulnerabilities can disrupt businesses, healthcare, government and national infrastructure.

They consider how cybersecurity has become a global issue and why organisations employ specialists to identify weaknesses before criminals can exploit them. Students also explore the ethical difference between using technical knowledge to protect a system and using it to cause harm.

Authentic connections

How does this topic connect to real life, careers, other subjects and important values?

Students investigate real-world cybersecurity risks and consider the responsibility organisations have to protect people's information. They explore ethical questions surrounding hacking, privacy, data collection and security testing and recognise that having the technical ability to access a system does not mean it is acceptable or legal to do so.

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There are strong links with Citizenship and RSHE through privacy, responsibility, online safety and data protection. Mathematics links develop through logical thinking and encryption, while Business connections emerge through the financial and operational impact of ransomware and data breaches.

Careers Framework Skills: Adapting, Listening and Speaking
Students develop Adapting through responding to changing cybersecurity threats and vulnerabilities. Listening develops through evaluating security guidance and different responses to digital risks, while Speaking develops through explaining and justifying recommended security solutions.

Careers: Penetration Tester, Security Systems Engineer and IT Compliance Auditor
A Penetration Tester ethically tests digital systems to identify weaknesses before they can be exploited. A Security Systems Engineer develops and maintains systems designed to protect digital infrastructure, while an IT Compliance Auditor checks that organisations follow appropriate security, privacy and data-protection requirements.

Resources *What books, websites, videos and materials will support our learning?*	**Assessment** *How will we show what we know, remember and can apply?*
• NCSC CyberFirst resources • Cisco Networking Academy • Cybersecurity case studies • Ransomware and vulnerability investigation activities • Year 9 Digital Literacy Knowledge Organiser • Department Digital Deep-Dive and “Say it Better” activities	Students complete practical and written tasks requiring them to identify vulnerabilities, explain security risks and recommend appropriate protective responses. The Network and Penetration Assessment evaluates students' understanding of data routes and vulnerability patching. Approximately 60% of assessment focuses on substantive knowledge, including vulnerabilities, ransomware, encryption, penetration testing and security controls. 40% focuses on disciplinary knowledge through analysing risks, problem solving, evaluating security responses and communicating technical decisions.

Topic 3
Enquiry

How can data be used to automate decisions?

Big Picture
What are the main ideas and big questions in this topic?

Students build upon their Year 8 spreadsheet and data modelling skills by working with larger and more complex datasets. They explore how organisations use data to identify patterns, make predictions, and automate decisions.

The enquiry develops students’ confidence using nested logic, linked data, and automated spreadsheet systems. Students begin to think like data analysts, using formulas and logical processes to make increasingly sophisticated decisions from data.

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Zoom In
What knowledge, skills and key vocabulary will we learn step by step?

Students revisit spreadsheet modelling and develop their ability to organise, analyse, and manipulate data accurately.

They learn how to combine logical functions such as IF, AND, and OR and apply these within increasingly complex spreadsheet models. Students explore how separate sets of data can be linked and how automated calculations can reduce repetitive work and support decision making.

Students also investigate how organisations use data forecasting to identify patterns and make predictions. They test and refine formulas, identify errors, and improve the accuracy of their models.

Throughout the enquiry students develop confidence using technical vocabulary including dataset, data array, formula, function, nested logic, IF, AND, OR, automation, forecasting, variable, model, accuracy, debugging, and validation.

The enquiry is structured around a sequence of focused questions including:

- How can spreadsheets manage complex data?
- What is nested logic?
- How can IF, AND, and OR automate decisions?
- How can different datasets be linked?
- How can data be used to identify patterns and make predictions?
- Why is testing and debugging important in data models?

Pre-Requisite Knowledge
What have we already learned that will help us with this topic?

Students build directly upon their Year 8 work with Microsoft Excel, formulas, functions, data modelling, and automation. They should already be confident using functions such as SUM, AVERAGE, MIN, MAX, and COUNT and understand how spreadsheets can support decision making.

Year 9 extends this by introducing more complex logical formulas, linked datasets, and automated decision-making systems.

Pitch Up
How will we challenge ourselves?

Students are challenged to create increasingly sophisticated spreadsheet models rather than relying on individual formulas.

More confident students combine multiple functions and nested logical processes, link different sets of data, and use forecasting to automate decisions. They are expected to troubleshoot errors independently and justify how their model produces accurate and useful results.

Students continue to develop their ability to “Say it Better” by explaining their technical decisions using precise subject-specific vocabulary.

Wider Framework
How does this learning connect to future topics and bigger goals?

Curriculum Hinterland
What wider knowledge will deepen our understanding of this topic?

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This enquiry develops the analytical and technical skills needed for future study in Computer Science, Business, Geography, Science, and other data-driven subjects. It also prepares students for later Year 9 work where they will be expected to plan, test, and evaluate increasingly complex digital projects independently. The existing curriculum identifies data automation as an important foundation for KS4 project work.	Students explore how modern organisations increasingly rely upon large datasets and automated systems to support decisions. They consider how data is used within business, healthcare, manufacturing, government, and science to identify patterns, predict future needs, and improve efficiency. Students recognise that automated decisions still depend upon the quality and accuracy of the data and formulas behind them.

Authentic connections

How does this topic connect to real life, careers, other subjects and important values?

Students explore how businesses and organisations use data to make decisions, predict demand, manage resources, and improve performance. They develop an understanding of why accurate data handling is important when digital systems are used to influence real-world decisions.

There are strong links with Mathematics through formulas, logic, patterns, and calculations. Business links develop through forecasting and automated decision making, while Geography and Science connections emerge through analysing datasets and using evidence to identify trends.

Careers Framework Skills: Planning, Problem Solving and Creativity
Students develop Planning through organising datasets and constructing logical spreadsheet models. Problem Solving develops through identifying errors and refining formulas, while Creativity develops through designing efficient automated solutions to data-based problems.

Careers: Data Scientist, Business Intelligence Analyst and Data Engineer
A Data Scientist analyses large datasets to identify patterns and support predictions. A Business Intelligence Analyst uses data to help organisations make informed decisions, while a Data Engineer develops systems that organise and manage large amounts of information.

Resources

What books, websites, videos and materials will support our learning?

- Microsoft Excel
- Raspberry Pi Foundation / NCCE data resources
- Real-world datasets and spreadsheet modelling activities
- Teacher-led formula and nested logic demonstrations
- Year 9 Digital Literacy Knowledge Organiser
- Department Digital Deep-Dive and “Say it Better” activities

Assessment

How will we show what we know, remember and can apply?

Students complete the Nested Logic Data Check, requiring them to organise data, apply multi-step formulas, and demonstrate accurate data aggregation and automated decision making.

Approximately 60% of assessment focuses on substantive knowledge, including formulas, functions, nested logic, linked datasets, automation, and forecasting. 40% focuses on disciplinary knowledge through analysing data, constructing and debugging spreadsheet models, solving problems, and explaining technical decisions.

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Topic 4
Enquiry

How do we design digital products that work well for users?

Big Picture
What are the main ideas and big questions in this topic?

Students explore the project lifecycle, user interface design and user experience by planning and designing an interactive digital product.

They learn how designers take a user need and turn it into a structured digital solution using wireframes, storyboards, navigation plans and prototypes. Students consider how accessibility, layout and navigation affect the way different users experience digital products.

The enquiry encourages students to think like software designers, combining technical planning with creative decision making.

Zoom In
What knowledge, skills and key vocabulary will we learn step by step?

Students begin by exploring the project lifecycle and how digital products are planned before they are created.

They investigate UI and UX, considering the difference between how a digital product looks and how easy it is to use. Students explore visual hierarchy, accessibility, navigation and user needs before creating wireframes and storyboards for their own application ideas.

Students then develop interactive prototypes and test how effectively users can move through them. Feedback is used to identify problems and improve the final design.

Throughout the enquiry students develop confidence using technical vocabulary including UI, UX, HCI, user need, accessibility, wireframe, storyboard, prototype, navigation, hierarchy, interface, testing, feedback and iteration.

The enquiry is structured around a sequence of focused questions including:

- What is the project lifecycle?
- What is the difference between UI and UX?
- How do designers identify user needs?
- What makes an interface easy to use?
- How can wireframes and storyboards support planning?
- Why is user testing important?

Pre-Requisite Knowledge
What have we already learned that will help us with this topic?

Pitch Up
How will we challenge ourselves?

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Students build upon the planning, digital communication and creative design skills developed throughout Years 7 and 8.

They should already understand audience, purpose, visual communication and digital presentation. Earlier Year 9 projects have also developed their ability to analyse systems, solve technical problems and work more independently.

This enquiry extends those skills by introducing a more structured approach to software and application design.

Students are challenged to create original interfaces rather than relying upon templates and to make design choices based upon specific user needs.

More confident students consider how different users may experience the same digital product and develop solutions to accessibility problems. They are expected to justify decisions about layout, navigation and functionality.

Students continue to develop their ability to "Say it Better" by using precise technical language when explaining design decisions and evaluating user feedback.

Wider Framework

How does this learning connect to future topics and bigger goals?

This enquiry develops skills that are highly transferable to Computer Science, Business, Media Studies and creative digital subjects.

Students learn how digital projects move from an initial idea through planning, design, testing and improvement. These skills support future coursework and project-based learning at KS4.

Curriculum Hinterland

What wider knowledge will deepen our understanding of this topic?

Students explore how user-centred design has become an important part of modern software development.

They consider why successful digital products need to work for a wide range of users and how accessibility can influence design choices. Students also recognise that digital products are rarely created perfectly first time and that testing, feedback and refinement are important parts of the design process.

Authentic connections

How does this topic connect to real life, careers, other subjects and important values?

Students investigate how websites, apps and digital services are designed around the needs of users. They consider how poor design can create barriers and why accessibility is important when creating digital products for different audiences.

There are strong links with Design Technology and Art through visual design and prototyping, Business through customer and user needs, and RSHE and Citizenship through inclusion, accessibility and designing for different groups within society.

Careers Framework Skills: Creativity, Listening and Adapting
Students develop Creativity through designing original digital interfaces. Listening develops through gathering and responding to user feedback, while Adapting develops as students refine their designs in response to testing.

Careers: UI/UX Designer, App Prototyper and Mobile Product Manager
A UI/UX Designer creates digital interfaces that are clear, accessible and easy to use. An App Prototyper develops early versions of digital products so that ideas can be tested, while a Mobile Product Manager helps coordinate the planning, development and improvement of digital applications.

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Resources *What books, websites, videos and materials will support our learning?*	Assessment *How will we show what we know, remember and can apply?*
• Interaction Design Foundation resources • Wireframing and prototyping tools • Example website and app interfaces • Accessibility and user-testing activities • Year 9 Digital Literacy Knowledge Organiser • Department Digital Deep-Dive and “Say it Better” activities	Students complete the UI/UX Application Design Brief, producing wireframes, storyboards and an interactive prototype that demonstrates clear navigation and consideration of user needs. Approximately 60% of assessment focuses on substantive knowledge, including UI, UX, accessibility, wireframes, storyboards, navigation and prototyping. 40% focuses on disciplinary knowledge through planning, designing, testing, responding to feedback and evaluating the effectiveness of a digital solution.

Topic 5
Enquiry

How can digital media become interactive rather than simply tell a story?

Big Picture
What are the main ideas and big questions in this topic?

Students develop their creative digital skills through Advanced Media Engineering and Procedural Asset Management. They move beyond simple linear digital media and explore how different digital assets can be combined to create more complex and interactive outcomes.

Students work with multi-track software, managing different media assets and considering how branching choices can change the way a user experiences a digital narrative.

The enquiry encourages students to combine creativity with technical organisation, thinking carefully about how digital assets are planned, managed and brought together to create an effective final product.

Zoom In
What knowledge, skills and key vocabulary will we learn step by step?

Students explore how different digital assets can be created, organised and combined within a media project.

They develop their use of multi-track software, managing layers and assets to create increasingly sophisticated digital outcomes. Students then explore the difference between linear and branching structures, considering how user choices can create different routes through an interactive narrative.

Students plan, create, test and refine their own digital response, developing greater independence when managing assets and solving technical problems.

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Throughout the enquiry students develop confidence using technical vocabulary including asset, layer, track, timeline, linear, branching, interactive, sequence, event, pathway, integration, workflow and debugging.

The enquiry is structured around a sequence of focused questions including:

- What is a digital asset?
- How can different assets be organised and managed?
- How does multi-track software help us build digital media?
- What is the difference between linear and branching media?
- How can user choices change a digital narrative?
- How can we test and improve an interactive digital outcome?

Pre-Requisite Knowledge
What have we already learned that will help us with this topic?

Students build upon the creative digital production, planning and media skills developed throughout Years 7 and 8.

Their Year 9 UI/UX project has also developed their understanding of user experience, navigation, planning and interactive design. This enquiry extends those skills by asking students to manage multiple digital assets and create more complex interactive pathways.

Pitch Up
How will we challenge ourselves?

Students are challenged to create their own digital responses rather than relying upon existing templates or simple linear structures.

More confident students develop multi-layered and branching outcomes, managing several digital assets and creating clear interactive elements. They are expected to troubleshoot problems independently and refine their work through testing.

Students continue to develop their ability to “Say it Better” by explaining their technical and creative decisions using accurate subject-specific vocabulary..

Wider Framework
How does this learning connect to future topics and bigger goals?

This enquiry prepares students for their final Year 9 project, where they will bring together their KS3 learning through an independent physical computing solution and technical portfolio.

The ability to plan, organise and manage complex digital projects also supports future study in Media Studies, Computer Science and other creative or coursework-based subjects.

Curriculum Hinterland
What wider knowledge will deepen our understanding of this topic?

Students explore how interactive digital media is used across games, websites, apps and other digital experiences. They consider how modern digital products increasingly allow users to make choices rather than simply follow a fixed sequence.

Students also develop an understanding of how successful digital products depend upon the careful management and integration of many different assets, with creative and technical roles often working together to produce a final outcome.

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Authentic connections
How does this topic connect to real life, careers, other subjects and important values?

Students explore how interactive media combines creative ideas with technical processes and consider how different design choices affect the experience of an audience. They develop independence while also recognising the importance of testing, feedback and respecting the creative contributions of others.

There are strong links with Media Studies through digital narratives and audience experience, English through structure and storytelling, and Art and Design through visual communication and creative production.

Careers Framework Skills: Creativity, Teamwork and Adapting
Students develop Creativity through designing original interactive digital outcomes. Teamwork develops through sharing ideas, managing resources and peer testing, while Adapting develops as students respond to technical problems and feedback.

Careers: Interactive Media Designer, Game Designer and Digital Content Producer
An Interactive Media Designer creates digital experiences that respond to user choices. A Game Designer plans interactive systems, pathways and user experiences, while a Digital Content Producer brings together different media assets to create engaging digital products.

Resources
What books, websites, videos and materials will support our learning?

- Department multi-track media software and resources
- Interactive digital media examples
- Branching narrative planning activities
- Storyboards and asset-management templates
- Year 9 Digital Literacy Knowledge Organiser
- Department Digital Deep-Dive and “Say it Better” activities

Assessment
How will we show what we know, remember and can apply?

Students complete practical tasks requiring them to plan, organise and combine digital assets to create an interactive media outcome, demonstrating effective use of multi-track software and branching structures.

Approximately 50% of assessment focuses on substantive knowledge, including digital assets, multi-track workflows, linear and branching structures, interaction and asset management. 50% focuses on disciplinary knowledge through planning, creative production, technical problem solving, testing, refinement and evaluation.

Topic 6
Enquiry

How can we combine our digital skills to create an independent physical computing solution?

Big Picture
What are the main ideas and big questions in this topic?

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Students bring together their learning from across KS3 through Physical Logic Synthesis and an Independent Systems Portfolio. They design an integrated physical computing solution, combining hardware and software to create a working digital system.

Students develop and debug their own event-driven control algorithms, rather than relying on existing templates or simple linear code. The project culminates in a technical portfolio where students demonstrate their practical skills, problem solving and ability to explain their work using accurate technical language.

Zoom In

What knowledge, skills and key vocabulary will we learn step by step?

Students plan a physical computing solution and consider how hardware, software, inputs and outputs need to work together. They develop their own event-driven algorithms, using logical sequences and control structures to create a functioning system. Students test their solution, identify problems and use debugging and troubleshooting to improve its performance.

Students then select and organise evidence from their Year 9 work into a technical portfolio, explaining their design choices, technical processes and improvements. The final outcome allows students to demonstrate both practical digital skills and increasingly independent technical reflection.

Throughout the enquiry students develop confidence using technical vocabulary including algorithm, input, output, event, control, hardware, software, physical computing, logic, debugging, troubleshooting, testing, iteration and portfolio.

The enquiry is structured around a sequence of focused questions including:

- How do hardware and software work together?
- What is an event-driven algorithm?
- How can inputs control different outputs?
- How do we test and debug a physical computing system?
- How can we improve a digital solution?
- How can a technical portfolio demonstrate our KS3 learning?

Pre-Requisite Knowledge

What have we already learned that will help us with this topic?

Students bring together knowledge and skills developed throughout Years 7, 8 and 9 Digital Literacy, including planning, computational thinking, digital creation, programming and problem solving.

Their Year 9 projects have required increasing independence when working with networks, cybersecurity, data, UI/UX and interactive media. This final project asks students to combine these habits of planning, testing, problem solving and reflection within an independent practical outcome..

Pitch Up

How will we challenge ourselves?

Students are challenged to design their own physical computing response, rather than simply reproducing an existing model or following a set of instructions.

More confident students create ambitious event-driven systems with clear interactive elements and independently troubleshoot problems within their hardware and code. They are expected to explain why changes were made and how these improved the final outcome.

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	Students continue to "Say it Better" by using accurate technical vocabulary when presenting and reflecting upon their work.
Wider Framework *How does this learning connect to future topics and bigger goals?*	**Curriculum Hinterland** *What wider knowledge will deepen our understanding of this topic?*
This project completes the KS3 Digital Literacy journey and prepares students for the greater independence required at KS4. Students develop experience of planning, creating, testing and evaluating a sustained digital project. These skills support progression into Computer Science, Business, Media Studies and other coursework or technology-based subjects, where students will need to manage larger projects and work independently.	Students explore how physical computing allows digital systems to interact with the real world. They recognise that many everyday technologies combine sensors, inputs, software and outputs to respond automatically to changing conditions. Students also consider the importance of open-source technology and physical computing systems, recognising how programmers and developers can build upon existing technologies to create new solutions.

Authentic connections
How does this topic connect to real life, careers, other subjects and important values?

Students explore how physical computing is used to solve real-world problems and consider how digital systems can respond automatically to information from their environment. They develop independence and resilience through testing and debugging while recognising that successful technical work often requires repeated improvement.

There are strong links with Design Technology through designing and testing practical systems, Science through inputs, outputs and physical processes, and Mathematics through logic, sequencing and algorithms.

Careers Framework Skills: Leadership, Planning and Adapting
Students develop Leadership by taking responsibility for their own independent project. Planning develops through designing and managing a solution from initial idea to final outcome, while Adapting develops through debugging, troubleshooting and responding constructively when a system does not work first time.

Careers: Systems Developer, Automation Engineer and Robotics Technician
A Systems Developer designs and develops digital systems to solve particular problems. An Automation Engineer creates systems that use hardware and software to perform tasks automatically, while a Robotics Technician builds, tests and maintains programmable physical systems.

Resources *What books, websites, videos and materials will support our learning?*	**Assessment** *How will we show what we know, remember and can apply?*
• BBC micro:bit • Microsoft MakeCode • Physical computing hardware and components	Students complete the Key Stage 3 Technical Portfolio, demonstrating their ability to curate digital outcomes, debug physical automation code and provide clear technical reflections using subject-specific language.

• Algorithm planning and debugging activities • Year 9 Digital Literacy Knowledge Organiser • Department portfolio and reflection resources	Approximately 50% of assessment focuses on substantive knowledge, including physical computing, hardware and software interaction, inputs, outputs, algorithms, events and debugging. 50% focuses on disciplinary knowledge through planning, programming, problem solving, testing, refinement and technical reflection. This final assessment brings together the department's Year 9 KPI areas of Planning, Technical Application, Problem Solving and Reflection and provides a clear endpoint to the students' KS3 Digital Literacy journey.