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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strand | | Knowledge and understanding | | | | | Processes and production skills | | | | | | | | | | | | | | | | |
|  |  | | Digital  systems | | | Representation  of data | | Collecting,  managing and  analysing data | | *Creating digital solutions by:* | | | | | | | | | | | | | | |
| Investigating  and defining | | | | Generating  and designing | | | | | Producing  and implementing | | Evaluating | | Collaborating  and managing | |
|  | **Content Description** | | Investigate how data is transmitted and secured in wired, wireless and mobile networks, and how the specifications affect performance (ACTDIK023 ) | | Investigate how digital systems represent text, image and audio data in binary (ACTDIK024 ) | | | Acquire data from a range of sources and evaluate authenticity, accuracy and timeliness (ACTDIP025) | | Analyse and visualise data using a range of software to create information, and use structured data to model objects or events (ACTDIP026 ) | | Define and decompose real-world problems taking into account functional requirements and economic, environmental, social, technical and usability constraints (ACTDIP027) | | | Design the user experience of a digital system, generating, evaluating and communicating alternative designs (ACTDIP028) | | Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors (ACTDIP029) | | Implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language (ACTDIP030) | | Evaluate how student solutions and existing information systems meet needs, are innovative, and take account of future risks and sustainability (ACTDIP031) | | Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account  (ACTDIP032) | |
| **Sequence of Lessons / Unit** | **Approx. time rq’d** | **Year A or B** | CD | Achievement standard # | CD | | Achievement standard # | CD | Achievement standard # | CD | Achievement standard # | CD | Achievement standard # | | CD | Achievement standard # | CD | Achievement standard # | CD | Achievement standard # | CD | Achievement standard # | CD | Achievement standard # |
| Get connected | 12 | 7 |  | 1 |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |
| Networks and performance | 10 | 8 |  | 1, 2 |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |
| Data and information | 10 | 7 |  |  |  | |  |  | 7 |  | 7 |  | 4 | |  |  |  |  |  |  |  |  |  |  |
| Computers and binary | 9 | 8 |  |  |  | | 2 |  |  |  |  |  | 4 | |  |  |  |  |  |  |  |  |  |  |
| Create an app or a game | 16 | 7 |  |  |  | |  |  |  |  |  |  | 4 | |  | 5 |  | 5 |  | 5 |  | 6 |  |  |
| Robotics and embedded systems | 20 | 8 |  | 1 |  | |  |  |  |  |  |  | 4 | |  | 5 |  | 5 |  | 5 |  | 6 |  |  |
| Digital citizen | 7 | 7 |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | 6 |  | 8 |
| Connected or distracted, informed or misinformed? | 6 -8 hrs | 8 |  |  |  | |  |  | 2 |  | 2 |  | 4 | |  | 5 |  |  |  |  |  |  |  | 3, 8 |

*Cells highlighted in blue indicate that the unit is relevant to a component of the Year 8 Achievement standard. The number in each blue highlighted cell correlates to the numbered Year 8 Achievement standard in the table below*

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| --- | --- | --- |
| **Years 5 and 6 Achievement Standard** | **Years 7 and 8 Achievement Standard** | **Years 9 and 10 Achievement Standard** |
| By the end of Year 6:   * Students explain the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. * They explain how digital systems use whole numbers as a basis for representing a variety of data types. * Students define problems in terms of data and functional requirements and design solutions by developing algorithms to address the problems. * They incorporate decision-making, repetition and user interface design into their designs and implement their digital solutions, including a visual program. * They explain how information systems and their solutions meet needs and consider sustainability. * Students manage the creation and communication of ideas and information in collaborative digital projects using validated data and agreed protocols. | By the end of Year 8   * Students distinguish between different types of networks and defined purposes. (1) * They explain how text, image and audio data can be represented, secured and presented in digital systems. (2) * Students plan and manage digital projects to create interactive information. (3) * They define and decompose problems in terms of functional requirements and constraints. (4) * Students design user experiences and algorithms incorporating branching and iterations, and test, modify and implement digital solutions. (5) * They evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability. (6) * They analyse and evaluate data from a range of sources to model and create solutions. (7) * They use appropriate protocols when communicating and collaborating online. (8) | By the end of Year 10   * Students explain the control and management of networked digital systems and the security implications of the interaction between hardware, software and users. * They explain simple data compression, and why content data are separated from presentation. * Students plan and manage digital projects using an iterative approach. * They define and decompose complex problems in terms of functional and non-functional requirements. * Students design and evaluate user experiences and algorithms. * They design and implement modular programs, including an object-oriented program, using algorithms and data structures involving modular functions that reflect the relationships of real-world data and data entities. * They take account of privacy and security requirements when selecting and validating data. Students test and predict results and implement digital solutions. * They evaluate information systems and their solutions in terms of risk, sustainability and potential for innovation and enterprise. * They share and collaborate online, establishing protocols for the use, transmission and maintenance of data and projects. |