**DIGITAL TECHNOLOGIES:**

**UNPACKING THE CONTENT DESCRIPTIONS**

PLEASE NOTE:
This pack does not contain all content descriptions for Levels 7 and 8, but can be used as a guide to develop your own lesson plans

**Digital Technologies: Unpacking the Content Descriptions**

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| **Strand** | Creating Digital Solutions |  | **Sample activities** |
| **Content Description** | Define and decompose real-world problems taking into account functional requirements and sustainability (economic, environmental, social), technical and usability constraints | * decomposing a problem into the smallest component parts, and classifying parts, such as a website’s menus, pages and buttons, or a game’s characters, objects and backgrounds
* exploring what a program or solution must do to function as intended, for example comparing a user’s input to a stored username and password combination, or passing data from one function to another
* investigating materials that are used to create digital systems and the environmental impact of their creation
* following the path to recycling or disposal and the costs associated with each
* define the intended audience for the program or solution, the assumptions that have been made about age, physical dexterity, vision and hearing, then detail where adjustments could be incorporated on the proposed device or platform
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| **Related extract from Achievement Standard** | Students define and decompose problems in terms of functional requirements and constraints. |
| **Suggested focus** | Lessons may focus on:* decomposition and abstraction
* functional requirements
* sustainability issues in technology, such as:
* energy consumption
* materials production
* end of use options
* assumptions about physical capability of users
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**Digital Technologies: Unpacking the Content Descriptions**

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| **Strand** | **Creating Digital Solutions** |  | **Sample activities** |
| **Content Description** | Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors | * reviewing flowchart symbols to determine meaning and usage
* reviewing how algorithms may look when written as English statements
* comparing the same algorithm presented:
	+ as a flowchart
	+ as English statements
* comparing algorithms with statements in a:
	+ visual programming language
	+ general-purpose programming language
* creating a flowchart for a common task where decisions and repetition are made, for example searching for a word in the dictionary
* creating an algorithm as English statements for a common task where decisions and repetition are made, for example entering in a class set of test scores
* tracing algorithms to check accuracy, predict output based on given input (desk-checking) and identify any errors
 |
| **Related extract from Achievement Standard** | They design user experiences and algorithms incorporating branching and iterations, and develop, test, and modify digital solutions. |
| **Suggested focus** | Lessons may focus on:* reviewing flowchart symbols
* reviewing how algorithms may look as English statements
* creating a flowchart to represent an algorithm
* creating an algorithm as English statements
* tracing algorithms to make predictions based on different input
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**Digital Technologies: Unpacking the Content Descriptions**

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| **Strand** | **Creating Digital Solutions** |  | **Sample activities** |
| **Content Description** | Develop and modify programs with user interfaces involving branching, iteration and functions using a general-purpose programming language | * transforming simple algorithms into programs using a nominated general-purpose programming language
* analysing more complex programs and identifying the variables used and their data types
* creating programs that incorporate all three control structures (sequence, branching and iteration)
* developing programs where the output is dependent on user input
* programming a digital device to respond to objects based on a particular criteria, for example colour
* using functions that return values in a program
* using methods in a drawing module, for example using “Turtle” methods to create various shapes
* modifying programs with simple data structures such as lists or arrays
* modifying supplied programs and predicting the expected output
* using various techniques to test the expected output of a program, such as testing tables
 |
| **Related extract from Achievement Standard** | They design user experiences and algorithms incorporating branching and iterations, and develop, test, and modify digital solutions. |
| **Suggested focus** | Lessons may focus on:* overview of basic control structures used in general-purpose programming (sequence, branching and iteration)
* introducing:
* variables and data types
* methods and data structures
* procedures and functions that return a value
* solving simple problems through the use of a general-purpose programming language
* using testing tables and test data
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**Digital Technologies: Unpacking the Content Descriptions**

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| **Strand** | **Data and Information** |  | **Sample activities** |
| **Content Description** | Analyse and visualise data using a range of software to create information, and use structured data to model objects or events | * introduction to spreadsheets
* using spreadsheet software to construct tables using calculations and charts, for example sum, average, count, bar charts and pie charts
* creating simple databases with tables, fields, records and queries
* presenting data as infographics
* simple statistical analysis
* drawing conclusions from information created and representing visually
 |
| **Related extract from Achievement Standard** | They analyse and evaluate data from a range of sources to model solutions and create information. |
| **Suggested focus** | Lessons may focus on:* ways that data can be presented to produce information
* looking at various types of data, such as text, numbers and dates
* using statistics
* creating and formatting tables with data
* visualising data
* features of spreadsheets
* performing calculations and creating charts in spreadsheets
* features of databases
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**Digital Technologies: Unpacking the Content Descriptions**

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| **Strand** | **Digital Systems** |  | **Sample activities** |
| **Content Description** | Investigate how data are transmitted and secured in wired, wireless and mobile networks | * explanation of network components, such as routers, hubs, switches and bridges, including their characteristics and capabilities
* explanation of how networks work
* discussion of data transmission involving wireless, wired and mobile networks
* comparing wired and wireless networks
* investigating how the school’s wireless network works
* drawing a simple diagram of the school network
* explanation of network security
* investigation of network and internet protocols in data transmission
 |
| **Related extract from Achievement Standard** | Students distinguish between different types of networks and their suitability in meeting defined purposes. |
| **Suggested focus** | Lessons may focus on:* types of network components, such as routers and switches
* data transmission rates for transmission media, such as:
* wired – fibre optic and Ethernet
* wireless – 802.11, microwave and satellite
* mobile – 3G and 4G
* data security, such as encryption
* drawing a network
* network security, such as usernames, passwords and firewalls
* communications protocols, such as TCP/IP, FTP and HTTP
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