Digital Technologies – 9 and 10_ Overview

	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 the role of hardware and software in managing, controlling and securing the movement of and access to data in networked digital systems (ACTDIK034)		Analyse simple compression of data and how content data are separated from presentation (ACTDIK035)		Develop techniques for acquiring, storing and validating quantitative and qualitative data from a range of sources, considering privacy and security requirements (ACTDIP036)		Analyse and visualise data to create information and address complex problems, and model processes, entities and their relationships using structured data (ACTDIP037)		Define and decompose real-world problems precisely, taking into account functional and non-functional requirements and including interviewing stakeholders to identify needs (ACTDIP038)		Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics (ACTDIP039)		Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases (ACTDIP040)		Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language (ACTDIP041)		Evaluate critically how student solutions and existing information systems and policies, take account of future risks and sustainability and provide opportunities for innovation and enterprise (ACTDIP042)		Create interactive solutions for sharing ideas and information online, taking into account social contexts and legal responsibilities (ACTDIP043)		Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability (ACTDIP044)	
Sequence of Lessons / Unit	**Approx. time rq'd**	**Year**	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 #	CD	Achievement standard #
Networks and data	10	9	☑	1	☐		☐		☐		☐		☐		☐		☐		☐		☐		☐	
Data security	10	10	☑	1	☑	2	☐		☐		☐		☐		☐		☐		☑	9	☐		☑	10
Data-driven innovation	10	9	☐		☐		☑	4, 7	☑	4	☑	4	☐		☐		☐		☑	9	☐		☐	
Organise, visualise and analyse	10	10	☐		☐		☑	4, 7	☑	4	☑	4	☐		☐		☐		☐		☐		☐	
Games, apps and websites	20	9	☐		☐		☐		☐		☑	4	☑	5	☑	5	☑	8	☑	9	☐		☐	
Robotics and embedded systems	10-20	10	☐		☐		☐		☐		☑	4	☑	5	☑	5	☑	8	☑	9	☐		☐	
Managing a group project: Augmented Reality	10-20	9	☐		☐		☐		☐		☑	4	☑	5	☐		☑	6	☑	9	☑	3	☑	3
Collaborative project: What matters to you?	10-12 hrs	10	☐	1	☐		☐		☐				☐	5	☐		☐		☐		☐	7, 9	☐	3, 7, 10

Years 7 and 8 Achievement Standard	**Years 9 and 10 Achievement Standard**	
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 1. Students explain the control and management of networked digital systems and the security implications of the interaction between hardware, software and users. 2. They explain simple data compression, and why content data are separated from presentation. 3. Students plan and manage digital projects using an iterative approach. 4. They define and decompose complex problems in terms of functional and non-functional requirements. 5. Students design and evaluate user experiences and algorithms. 6. 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. 7. They take account of privacy and security requirements when selecting and validating data. 8. Students test and predict results and implement digital solutions. 9. They evaluate information systems and their solutions in terms of risk, sustainability and potential for innovation and enterprise. 10. They share and collaborate online, establishing protocols for the use, transmission and maintenance of data and projects.	