Scheme of Learning: Year 7 Computing

Topic Sequence:

1	2	3	4	5	6
Messaging in digital media	Networks from semaphores to the Internet	Programming essentials in Scratch – part I	Modelling data using spreadsheets	Programming essentials in Scratch – part II	Using media – Gaining support for a cause

Topic Overview:

Imagine a world without computer networks, and how different your life would be. There would be no more YouTube, Google, instant messaging, online video gaming, Netflix, and iTunes. There would be no online shopping, or quickly looking up directions to a location at the click of a button. There would be no more sharing of files or peripherals such as a printer, and no more central backups of information. As networks have evolved, society has become increasingly reliant on the services that they provide. They have changed the way we learn, work, play, and communicate. This unit begins by defining a network and addressing the benefits of networking, before covering how data is transmitted across networks using protocols. The types of hardware required are explained, as is wired and wireless data transmission. Learners will develop an understanding of the terms 'internet' and 'World Wide Web', and of the key services and protocols used. Practical exercises are included throughout to help strengthen understanding.
Links
Year 8 – Developing the Webs
GCSE: - Edexcel Topic 4 Networks

Lesson Sequence:

Lesson 1: Computer networks and protocols: This lesson will get the learners thinking about the history of different communication methods. Learners will learn what a computer network is, along with the meaning of the word 'protocol'. Learners will gain an appreciation of the growth of networked devices.

Lesson 2: Networking hardware: This lesson explores the functionality of key hardware components found in a network. The lesson covers network cables, hubs, servers and routers. Each is explained in turn, and learners then use their knowledge of each component to build a series of increasingly complicated network diagrams.

Lesson 3: Wired and wireless networks: This lesson explores the different wireless technologies, and how bandwidth varies between these technologies. Learners will discuss the mobile technologies of 3G, 4G, and 5G. Learners will develop an understanding of the term 'bandwidth' and develop an appreciation for online activities that are bandwidth-heavy, before moving on to explore the advantages and disadvantages of wired and wireless networks.

Lesson 4: The internet This lesson explores the internet and its uses. Learners will gain an appreciation of the vastness of the internet. It is truly global, with 99% of data transmitted through oceanic cables spanning all continents, the longest of which is 39,000 kilometres. Learners will develop an understanding of packet structure and packet switching. The term 'protocol' will be revisited, and two particular protocols, TCP and IP, will be explained.

Lesson 5: Internet services: This lesson explores the internet, its services, and the World Wide Web. Learners will understand the difference between the internet and the World Wide Web and how each came about. They will understand that the activity on the internet in a single minute is quite staggering. The term 'Internet of Things (IoT)' will be explored. Learners will discuss the advantages of IoT, as well as the disadvantages, focussing on privacy and security.

Lesson 6: The World Wide Web: This lesson explores the World Wide Web (WWW), the components that are associated with the WWW, and how they work together. The key components of the WWW are explained (browser, server, web pages, and search engines). A link is made to the first lesson of the unit, in which the class learnt about protocols. Learners will identify which websites should use HTTP and which should use HTTPS based on the type of activity that they support.

National curriculum links
Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems

Education for a connected world links
Explain the term 'connectivity' as the capacity for connected devices ('internet of things') to collect and share information about me with or without my knowledge (including microphones, cameras and geolocation).
Describe how internet-connected devices can affect me.

Sequence of Lessons:

1	Computer networks and protocols
2	Networking hardware
3	Wired and wireless networks
4	The internet
5	Internet services
6	The World Wide Web

Topic Resources:

Knowledge Map:	7.2 - Networks	Any other Resources:	

Assessment:

Knowledge:	24 Multiple Choice questions
Application of Knowledge:	Mastery Book

Supportive Reading:

Introduction to networks	What is a network? - Introduction to networks - KS3 Computer Science Revision - BBC Bitesize
KS3 Computing Complete Revision & Practice - CGP	Chapter 2
	Available from: KS3 Computing Complete Revision & Practice | CGP Books