

### **Information**

Digital systems can be connected, enabling users to access one device (printer) from multiple digital systems (desktop computers or mobile devices). These devices will form a network. Connected devices share information and data can be transmitted between the devices.

Connections to form a network include:

- **Wired** - A digital system will need to be connected via a wire. An ethernet cable connects devices together, access to devices can include printers or routers. Limitations of using an Ethernet cable include distance due to the length of the cable and loss of connection due to an unplugged cable.
- **Wirelessly** - Digital systems connect to form a network without cables. Wi-Fi and Bluetooth are common modes to transmit data. Wi-Fi allows digital systems to connect to other digital systems in a network and the internet. The router will connect you to the network and the modem connects you to the internet. Wi-Fi waves are short, accessibility is approximately 20m from the source. The further from the source, the signal decreases. This is symbolized through the Wi-Fi icon 'bars'. Bluetooth uses radio signals to pair devices (printers, phones, laptops, and tablets) and transmit data at a short distance.
- **Mobile Networks** - Cellular radio towers transmit data from the antenna tower to your mobile phone. The built-in technology allows the mobile phone to recognise the nearest tower. This data is represented as the signal strength icon on the mobile phone.

The process of transmitting data will influence the speed of the data. The type of Ethernet cable used will influence the speed. When transmitting data wirelessly, routers will affect the speed, the distance between your mobile phone and a cellular radio tower will affect the signal strength.

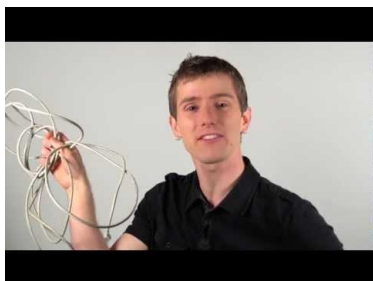
### **Curriculum Expectations**

Students will investigate the different methods used to transmit data. They will evaluate how the methods transmit data and how speed is impacted.

### **Video Resources**

*Click on the images to the open the videos.*

These videos further explain ethernet cables, Wi-Fi, Bluetooth and cellular radio towers.



Video Source: Techquickie



Video Source: BritLab



Video Source: morewireless0



Video Source: The Telegraph

# DATA

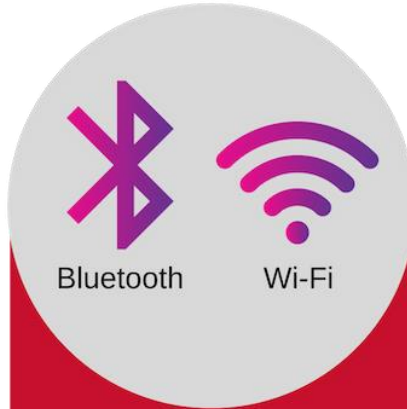
## Networks transmit data



### WIRED

Data transmitted via a cable (Ethernet cable)

Data is transmitted via the cable. If the system is not connected with a cable, the system cannot transmit data.



### WIRELESS

Data transmitted via radio waves

The radio waves allow devices to connect, transmit data without wires



### MOBILE

Data transmitted via cellular radio towers

Data is transmitted from the antenna to a mobile phone

These modes will influence the speed to transmit data.



Different ways are used to transmit data. Look at how data is securely transmitted and the specifications as the modes will effect data transmission.

