

DATA TRANSMISSION

Levels 5-6



When you send a letter, you need to ensure it's in an envelope, with a stamp, correct address. It will need to be dropped off in a mail box. It gets picked up by the postie, sorted, then eventually sent to your friend. This process could a few days to complete.

You send an email or a text message to your friend. They receive it almost instantly. How are these messages sent and how are they sent so quickly? The email you wrote is made up of data, it gets transmitted to the other device. Sometimes it feels like it's instant, but it does take time. Ever heard of 'lightning speed internet', that's a company's way of promoting really fast data being transmitted!

Data

The email/text that you write is made up of data. The data that you send isn't letters numbers or characters but it's binary code. Binary code is a sequence of 0 and 1's. The data is anything you send from one digital system to another one. We don't call them computers anymore because a digital system can be a laptop, phone, mobile device, there's more than just computers out there now! Check out our Binary Code if you need more information.

Transmitting Data

The following gives you a broad outline to get you started. The systems need to be connected together. Once they are connected they form networks. The speed of the data will depend on the system you are using and the connection. Take a look and compare how you access the internet at home and school.

Wired Connection

A digital system will need to be connected to a wire. A common cable that you might see around is the Ethernet cable (most of the time it comes in blue). The ethernet cable will connect the digital system to network.

Wireless Connection

The digital system will transmit data without a cable. The digital system still needs to access the connection but the devices that make the connections will be built in. Two examples of common ways to transmit data is via Wi-Fi and Bluetooth.

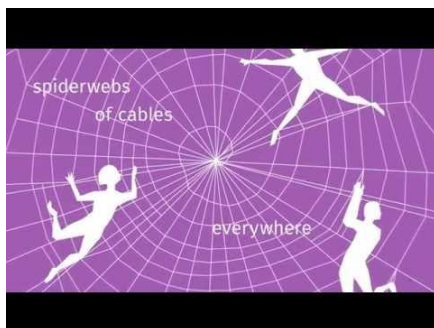
Wi-Fi

Celebrate because this was an Aussie invention! Wi-Fi allows digital systems to connect to other digital systems in a network and the internet without a cable. Wi-Fi waves are quite short and you can only have access to these waves from about 20m from the source. The further you are away from the source, the signal decreases. This will show with a reduction in the 'bars' that make up the Wi-Fi signal. You'll need to have access to a Wi-Fi hotspot to access the internet. This hotspot is a router. The router will connect you to the network and the modem connects you to the internet.

Bluetooth

Bluetooth connects devices (printers, phones, laptops, and tablets) and transmits data at a short distance. To connect the devices, they will need to be paired. Bluetooth uses a radio signals to connect and transmit data.

Click on the images to open the videos for more information on Wi-Fi and wireless connections.



Video source: CSIRO



Video source: Brit Lab



Video Source: Morewireless0