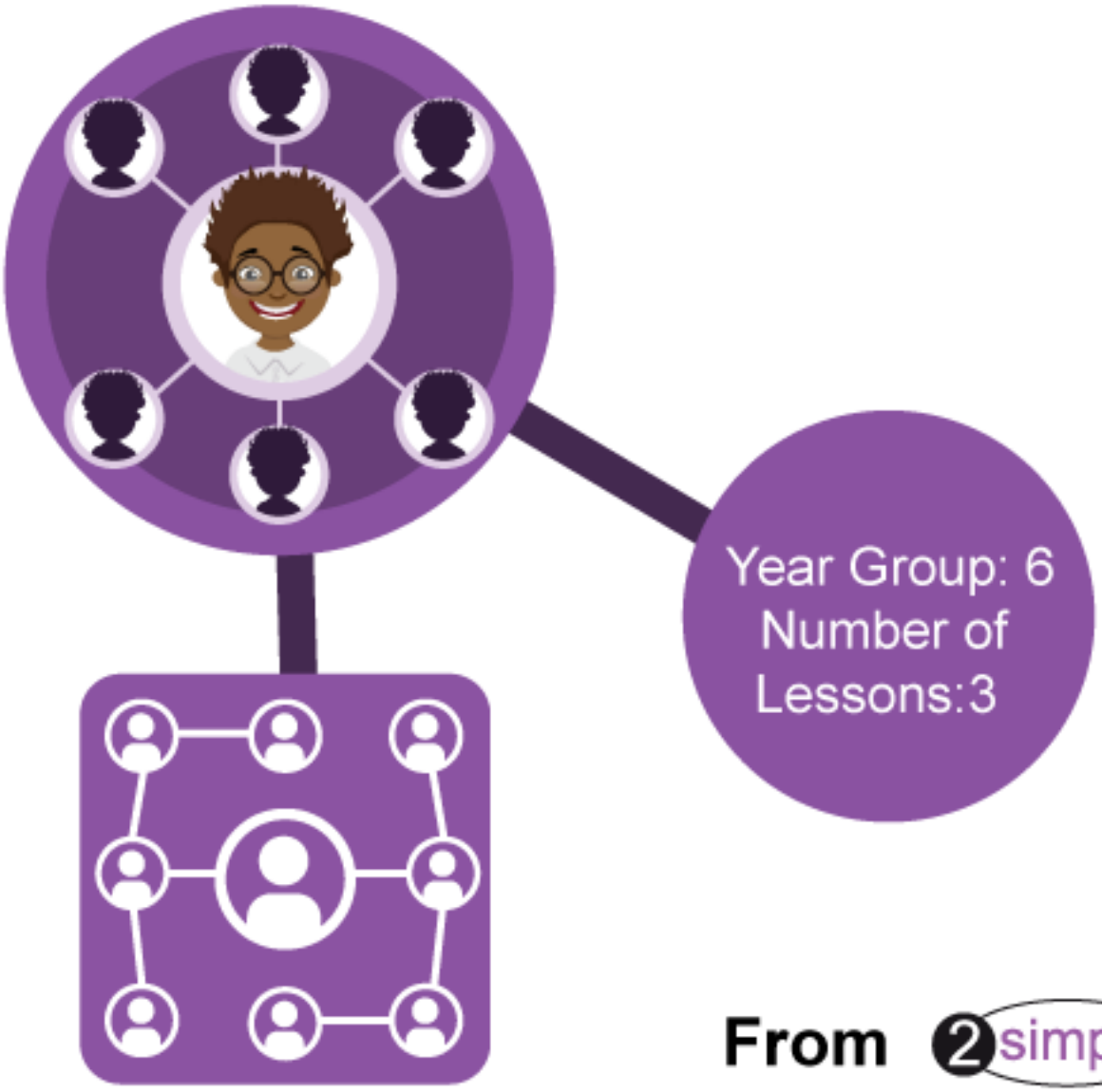
purple mash

Computing

Scheme of Work

Unit 6.6 - Networks



From 2simple

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Introduction

The aim of these sessions is to provide children with the opportunity to find out more about how networks work, understand computer networks including the internet, learn how they can provide multiple services, such as the World Wide Web, and explore the opportunities they offer for communication and collaboration.

PLEASE NOTE: Lesson 1 requires children to have completed a survey prior to the lesson. See the lesson plan for the link to the survey so you can ask pupils to do this in advance.

For these sessions, it is advisable that the children have their own individual logins to Purple Mash.

If you are currently using a single login per class or group and would like to set up individual logins yourself, then please see our guide to doing so at Create and Manage Users. Alternatively, please contact support at support@2simple.com or 0208 203 1781.

Acknowledgements: BBC website.

Medium-term Plan

Lesson	Aims	Success Criteria
1	To discover what the children know about the internet.	• Children know the difference between the World Wide Web and the internet.
2	To find out what a LAN and a WAN are. To find out how we access the internet in school.	• Children know about their school network.
3	To research and find out about the age of the internet. To think about what the future might hold.	• Children have researched and found out about Tim Berners-Lee. • Children have considered some of the major changes in technology which have taken place during their lifetime and the lifetime of their teacher/another adult.

Lesson 1 – The World Wide Web/Internet

Aims

- To discover what the children know about the internet.

Success criteria

- Children know the difference between the World Wide Web and the internet.

Resources

Unless otherwise stated, all resources can be found on the main unit 6.6 page. From here, click on the icon to set a resource as a 2do for your class. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you don't lose this page.

- Communication Questionnaire; this should be printed and distributed prior to the lesson for children to seek responses from older people.
- Purple Mash 2Connect.Tool. This is accessed by going to Tools>Communicating and Sharing>2Connect. It could be set as a 2do for children.
- BBC Bitesize resources.

Activities

Children access the internet as part of everyday life, but do they really know what is happening when they enter a web page address or send an email?

Do they understand that the internet and the World Wide Web are not the same thing?

1. Talk to the children about what they use the internet for at home and in school.
2. Using 2Connect, let the children create their own concept map of how they use the internet at home and in school.

   Note: If children have followed the scheme of work in previous years, they will have used 2Connect before. If they have not, it might be useful to watch the help videos within the tool to provide a quick overview. These can be accessed from within 2Connect using the button on the top right.
3. What would it be like not to have access to all the communication tools they currently have?
4. Ask the children to talk to relatives/parents/grandparents/carers at home. Find out how they would have communicated with their friends when they were at primary/secondary school. Can older people remember when the internet first started being used by people or when they first used email?
5. Ask the children what they think the difference is between the internet and the World Wide Web. Do they think that it is the same thing?
6. Watch the BBC video explaining the differences between the internet and the World Wide Web.

   BBC http://www.bbc.co.uk/guides/z2nbgk7#zt6c4wx

7. Had the children ever considered that the two things (whilst closely related) are different?

The internet

The internet is all the cables, fibre, routers, switches etc. that connects computers together, or networks of computers to one another.

The World Wide Web

The World Wide Web is about connections between documents. The World Wide Web is just one of the services which uses the internet to be able to communicate.

8. Having watched the video, create a concept map (using 2Connect) with the children to show all the things they use the internet for and how they use it to communicate.

Lesson 2 – Our School Network/Accessing the Internet

Aims

- To find out what a LAN and WAN are.
- To find out how we access the internet in school.

Success criteria

- Children know about their school network.

Resources

- It would be useful to have your school technician come into the classroom and talk to the children about the school network.
- A router, network cables, modem.
- Resources within the school network.

Activities

1. We take it for granted that we have access to the internet in most homes and in school, but without some devices and resources, this wouldn't be possible.
2. Talk to the children about your classroom and the different types of technology you have in it. This could include laptops, PCs and tablets.
3. If you had a technician available to talk to the children about the school network and to answer their questions this would be useful. The children could go on a learning walk with the technician around the school to answer the questions in this lesson.
4. Do the children have any understanding of how these devices access the internet?
5. Now think beyond your classroom and look at the whole school.
6. How many devices do you have in the whole school?
7. Can you access the internet from all the devices?
8. Can you access the internet in all areas of your school?
9. Connecting all your devices together in school or at home to allow them to work together is called a network. Take the children through the following devices that are part of a network. If you have examples in the school, show them to the children.

Wired networking

A group of devices which are connected to one another using network cables is basically a wired local network.

Router

A key part of a network is a router, which allows the computer to connect to the internet.

Local area network (LAN) ports

A network cable plugs into a port on your device and the other end plugs into a port on the router.

These ports, both on the router and on the end devices, are called local area network (LAN) ports or Ethernet ports.

By linking your devices together in this way, you are creating a LAN, which allows all connected computers to access the internet.

If you want to have a larger network, you will then need to add a **switch** (or a **hub**). This will allow the

Wide area network (WAN)

The router also has a separate port called the wide area network (WAN) port, which is also known as the internet port. This is often a different colour from the LAN ports.

Wireless networking

A wireless network is like a wired network except that the devices connect to the router and one another using radio wireless connections instead of cables. This is known as **Wi-Fi networking**.

Wireless networking devices don't need to have ports, just antennas, which are sometimes hidden inside the device itself. In many schools and homes, there are generally both wired and wireless devices, which can all communicate together.

Broadcast Wi-Fi signals are literally sent through the air; therefore, it is very easy to connect to a Wi-Fi

What do you have in your school?

- Check in your school; do you have a router? Do you have a switch and a hub?
- Do you have a wired or a wireless network?
- What can you find out about the network in your school?
- Check at home with an adult; do you have the same at home as you have in school?
- What can you find out about the network in your home?
- Who is your internet service provider?

10. Use 2Connect to show your own concept map of the network(s) you have in your school.
11. Now think about the number of schools, businesses, homes etc. all over the world that want access to the internet.
12. Think about your school network and how many of these networks (or even bigger networks) there must be, all linking to the internet. Amazing!
13. BBC resources: What is a network?
14. http://www.bbc.co.uk/schools/gcsebitesize/ict/datacomm/2networksrev1.shtml

Lesson 3 – Research

Aims

- To research and find out about the age of the internet.
- To think about what the future might hold.

Success criteria

- Children have researched and found out about Tim Berners-Lee.
- Children have considered some of the major changes in technology which have taken place during their lifetime and the lifetime of their teacher/another adult.

Resources

Unless otherwise stated, all resources can be found on the main unit 6.6 page. From here, click on the icon to set a resource as a 2do for your class. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you don't lose this page.

- Access to the internet.
- Set the activity Sir Tim Berners-Lee Profile as a 2Do for the class.

Activities

1. The children should now have some understanding about the internet and the World Wide Web and how their school network allows them to access the resources on the internet.
2. The children will all be familiar with certain search engines and using them to access information which is available to them, but do they have any understanding of how the information moves around the internet and how we get access to the information we have searched for?
3. Ask the children how they use the internet to search for information. What search engines do they use?
4. Create a class concept map using 2Connect of how the children think information travels around the internet.
5. For how long do the children think that we have had access to the World Wide Web?
6. Can the children find out about Sir Tim Berners-Lee and what he is famous for?
7. Children should complete the profile template for Sir Tim Berners-Lee.
8. Ask the children to think about the changes in technology that they have seen so far in their lifetime.
    - Mobile phones: how does this technology change when new mobile phones are produced?
    - TVs
    - New games consoles
    - New tablets
    - New PCs
9. Do the children recognise any significant changes? Are the changes mainly cosmetic or changes in technology which really get taken for granted and go unnoticed?

10. Talk to the children about the changes in technology that you have seen as an adult.

11. How many significant changes have you seen in your lifetime?

- Colour TV
- Computers in the home
- Mobile phones
- The internet
- Social media

12. Can the children imagine life without some of the resources to which they now have access all the time?
13. Talk to the children about the changes they might see in the future.
14. What do they think those changes might be?
15. What could our future world of communication look like?

Assessment Guidance

The unit overview for year 6 contains details of national curricula mapped to the Purple Mash Units. The following information is an exemplar of what a child at an expected level would be able to demonstrate when completing this unit with additional exemplars to demonstrate how this would vary for a child with emerging or exceeding achievements.

Assessment Guidance	
Emerging	Children are aware there is a difference between the Internet and the World Wide Web and can show all the things they use the internet for using 2Connect (Unit 6.6 Lesson 1). Children know there are different network types such as WAN and LAN and can provide some insight into how they access the internet at school (Unit 6.6 Lesson 2).
Expected	Children can explain the difference between the Internet and the World Wide Web and can show all the things they use the internet for using 2Connect (Unit 6.6 Lesson 1). Children know what a WAN and LAN are and can describe how they access the internet in school (Unit 6.6 Lesson 2).
Exceeding	Children know difference between the Internet and the World Wide Web and can provide examples. They can show the main uses for the internet using 2Connect (Unit 6.6 Lesson 1). Children can explain the differences between more than two network types such as: LAN, WAN, WLAN and SAN. In greater detail, children can describe how they access the internet at school and the hypothetical connections their computing device makes (Unit 6.6 Lesson 2).