

Scheme of Learning

Curriculum area: KS3 Computing and ICT

Key Stage: 3

Resources Location: T:\Department Specific\Computing and ICT\2019-2020\KS3\Year 8\4 Computer Networks

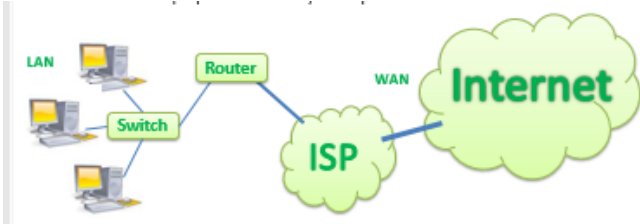
Unit/Topic Title: **Year 8 Computer Networks**

N°	Lesson Aim	Learning Objectives / Outcomes	Lesson Content	Prior and Cross Curricular Learning	Home Learning Links
1	<p>Introduction to Computer Networks</p> <p>Students to be able to define a Computer Network</p>	<ol style="list-style-type: none"> To identify different network types To describe why computers are networked together To explain the advantages & disadvantage of networking computers 	<p><u>Starter</u> Students told to create a circle map of what a Computer Network is. (LO1) (I CAN I WILL: Initiative, Drive, Risk Taking, Flexibility of Mind). Timed activity 2 minutes – without research initially. Scaffolding – allow students to look research.</p> <p>Think-Pair-Share: Purple Pen – 1 minute to speak to person next to them. (I CAN I WILL: Reflectiveness)</p> <p><u>Main</u> <i>Students are told about Starter for 10 keywords and prompted that the first one is next lesson</i></p> <p><u>Activity 1:</u> Students are introduced to the terms Local Area Network & Wide Area Network. (LO1) Paired Discussion around the differences between each. (I CAN I WILL: Initiative, Risk Taking, Flexibility of Mind). Share whole class ideas. Discuss LAN, WAN using slides.</p> <p><u>Activity 2:</u> Give students opportunity to reflect on the different types of networks by considering the advantages and disadvantages of networking computers (LO2 & LO3) (Scaffolding – for weaker students – consider card sort – answers on slide 10) (I CAN I WILL: Risk Taking, Flexibility of Mind, Initiative).</p>	<p><u>Prior Learning</u> Students are expected to know some components of a computer system. Linked to Under the Hood.</p> <p><u>Cross Curricular Literacy:</u> Considering key terms without research and therefore applying understanding of words from different contexts.</p> <p>Problem solving skills</p>	<p><i>Lesson Content in more detail on Lesson PowerPoint</i></p> <p>Lesson PowerPoint Exercise books</p> <p>Starter for 10 terms on Class Charts</p> <p>Oak Academy: https://classroom.thenational.academy/lessons/computer-networks-and-protocols-6mvk2t</p> <p>BBC Bitesize: https://www.bbc.co.uk/bitesize/guides/zc6rcdm/revision/1</p>

			<p><u>Plenary</u> Write a short paragraph to answer the question “Why are Computer Networks used?” (LO2) (I CAN I WILL: Reflectiveness).</p> <p>Scaffolding – use the key terms in boxes – LAN, WAN, Connect, Share, Network, Stand alone</p> <p><u>Homework</u>- Students to produce a revision resource (e.g. mind-map, diagram, knowledge organiser) for Starter for 10 key terms.</p>		
2	Client-Server Networks	<ol style="list-style-type: none"> 1. To identify client & server roles on a network 2. To be able to explain the services a variety of servers provide to a network 3. To be able to explain how a computer can connect to the internet 	<p><u>Bell Activity</u> Starter for 10 on keywords for the topic – suggestion to focus on the first 11 terms (I CAN I WILL: Resilience).</p> <p><u>Starter – Part B</u> Considering the Starter for 10 key terms you have used, Explain the differences between a Client-Server network and a Peer to Peer network? (I CAN I WILL: Reflectiveness, Initiative).</p> <p>Teacher to explain the main differences – students to add to answer in purple pen (I CAN I WILL: Reflectiveness).</p> <p><u>Main</u> Teacher introduce the terms “Client” & “Server” (LO1) – discussion about other contexts students may have come across these words e.g... Server, Serving – Restaurant Client – Business (or customer)</p> <p><u>Activity 1: Servers (LO2)</u> Complete the table defining the different types of server. What service do each of these servers provide to a network? Extension: Research another server and explain the service this would provide to a network (I CAN I WILL: Curiosity, Drive).</p> <p><u>Activity 2: Connectivity (LO3)</u></p>	<p><u>Prior Learning</u> Identifying the different networking key terms identified.</p> <p>Building on knowledge of computer hardware (Y7 – Under the Hood)</p> <p><u>Cross Curricular</u> Literacy: Understanding of key terms applied from other contexts</p>	<p><i>Lesson Content in more detail on Lesson PowerPoint</i></p> <ul style="list-style-type: none"> • Lesson PowerPoint • Starter for 10 – may want to print a template for speed. • Server table (Activity 1) <p>BBC Bitesize: https://www.bbc.co.uk/bitesize/guides/zh4whyc/revision/7</p>

How do would you connect a LAN to the internet?
 Students to answer the question (use ISP & Router as scaffolding).
 (I CAN I WILL: Curiosity, Initiative).

Plenary
 Describe this diagram to the person next to you using the key terms in green
Alternative Stretch & Challenge: Cannot use the terms in green, other person needs to draw diagram without seeing it.




(Challenge: What device is missing? Answer: Server)
 (I CAN I WILL: Reflectiveness).

3 Network Hardware: Hubs, Switches, Routers

1. To identify the key hardware components of a network
2. To understand the different costs associated with network hardware components

Starter
 Students to identify what the images are (LO1):



(I CAN I WILL: Initiative, Curiosity, Flexibility of Mind).
 Go through answers.
 Hub – Switch – Router (NB: This router has a built-in switch – Yellow Ports)

Main
Activity 1: Hub vs Switch (LO1)
 Students to explain their understanding of the differences between each device in three key points.

Teacher to guide through highlighting the different movement with stars. Use questioning to compare the

Prior Learning
 Network concepts.
 Hardware – Under the Hood

Cross Curricular
 Literacy: Key Terms

Numeracy:
 Budgeting - Cost of Networks.

Lesson Content in more detail on Lesson PowerPoint

Lesson PowerPoint

Oak Academy:
<https://classroom.thenational.academy/lessons/networking-hardware-c4u32t>

BBC Bitesize:
<https://www.bbc.co.uk/bitesize/guides/zh4whyc/revision/5>

			<p>differences. Students to add to their key points in purple pen. (I CAN I WILL: Reflectiveness).</p> <p><u>Activity 2: Network Set Up (LO2)</u> Students produce a proposal for a small business to set up a Computer Network. They will need:</p> <ul style="list-style-type: none"> • A Router • A Hub/Switch • A File Server • 5 Laptops <p><u>Extension:</u> How cheap can you get the proposal? What other hardware may be required? (I CAN I WILL: Curiosity, Initiative, Drive).</p> <p><u>Plenary</u> Identify a common key term that summarises each row. (I CAN I WILL: Reflectiveness, Curiosity, Risk Taking).</p> <p><u>Homework</u> Students prepare for Starter for 10 next lesson</p>		
4	The Internet	<ol style="list-style-type: none"> 1. To explain the difference between IP Address and MAC address 2. To explain what is meant by a Domain Name Server 3. To explain the features of data packets 	<p><u>Starter</u> Starter for 10 on keywords for the topic (I CAN I WILL: Resilience).</p> <p><u>Main</u> <u>Activity 1: IP v MAC (LO1)</u> Explain the key differences between the two types of address (I CAN I WILL: Initiative, Curiosity) (Teacher to review – students to add to notes in purple pen - (I CAN I WILL: Reflectiveness))</p> <p><u>Activity 2: DNS (LO2)</u> What is DNS? (I CAN I WILL: Initiative, Curiosity) (Teacher to review – students to add to notes in purple pen - (I CAN I WILL: Reflectiveness))</p>	<p><u>Prior Learning</u> Lesson 2: How we connect to the internet?</p> <p><u>Cross Curricular Literacy:</u> Comprehension – listening for meaning and application to lesson and Computing.</p> <p>Problem solving</p> <p>Independent research</p>	<p><i>Lesson Content in more detail on Lesson PowerPoint</i></p> <p><i>Oak Academy:</i> https://classroom.thenational.academy/lessons/the-internet-cqv3ac</p> <p>https://classroom.thenational.academy/lessons/internet-services-71hkqc</p> <p><i>BBC Bitesize:</i> https://www.bbc.co.uk/bitesize/guides/zp9jpv4/revision/1</p>

Activity 3: Data Packets (LO3)

Concept – Teacher to read the story of Captain Cook’s cottage and students. Stop at key points to consider how students would do this and link back to Computing.

Captain Cook’s Cottage - The cottage was constructed in 1755 in the English village of Great Ayton, North Yorkshire, by the parents of Captain James Cook, James and Grace Cook. Captain Cook was a was a British explorer, navigator, cartographer, and captain in the British Royal Navy. He made detailed maps of Newfoundland prior to making three voyages to the Pacific Ocean, during which he achieved the first recorded European contact with the eastern coastline of Australia and the Hawaiian Islands, and the first recorded circumnavigation of New Zealand.

The cottage, an ode to Captain Cook was brought in 1934 by Sir Russell Grimwade an Australian who wanted to pay testament to Captain Cook by moving his cottage to Victoria, Australia.

STOP HERE: How would students move Captain Cook's house?

The cottage was deconstructed brick by brick, labelled, and packed into 253 cases and 40 barrels for shipping on board the Port Dunedin from Hull. Cuttings from ivy that adorned the house were also taken and planted when the house was re-erected in Melbourne. Grimwade, a notable businessman and philanthropist, donated the house to the people of Victoria for the centenary anniversary of the settlement of Melbourne in October 1934.

SO HOW DOES THIS LINK TO COMPUTER NETWORKS: (30 second discussion) Data is deconstructed, labelled, transferred and reconstructed in exactly the same way as Captain Cook's Cottage.

Activity: Students are to pick 5 features of the data packet and explain what it is and what it does

The story can be found in the notes section of the presentation.

			<p><u>Plenary</u> Kahoot: Whole Topic https://play.kahoot.it/v2/lobby?quizId=37fe22e6-79c9-4efc-a3e6-5611ca528b95 (I CAN I WILL: Reflectiveness, Drive, Risk Taking, Resilience).</p> <p><u>Homework</u> Students to review the unit and prepare for test. Mind-map – What has been the impact of technology on society?</p>		
5	Computer Networks Assessment	<ol style="list-style-type: none"> 1. Complete Assessment on Computer Networks 2. Review Assessment on Computer Networks 	<p><u>Starter</u> Allow students 10 minutes to review the unit. Settle and prepare for test.</p> <p><u>Main</u> Activity: Students have 35 minutes to complete the assessment on Under The Hood (I CAN I WILL: Initiative, Resilience, Risk Taking). (LO1)</p> <p>Activity 2: Depending on time given to revising before assessment, once assessment is complete students can peer mark the assessments. All students trade papers and as class go through paper with students correcting answers in purple pen (I CAN I WILL: Reflectiveness). (LO3)</p> <p><u>Plenary</u> Students get own papers back and total their marks for the assessment and write in the back (I CAN I WILL: Resilience).</p> <p>Papers are collected in for teacher to review the marking and check answers</p> <p><u>Homework</u> None</p>	<p><u>Prior Learning</u> Skills taught throughout the unit</p> <p><u>Cross Curricular</u> Problem Solving skills</p> <p>Assessment considers other areas of life i.e. sports, lessons in day, etc.</p> <p>Use of maths to work out percentage</p>	<p>Computer Networks Assessment Computer Networks Mark Scheme</p> <p>Revision can be differentiated by time given</p> <p>Assessment can be differentiated by assistance given with prior revision and time allotted can be adjusted</p>
6	Assessment Review	<ol style="list-style-type: none"> 1. Reflect on your performance in 	<p><u>Starter:</u> Students think of 1 thing about Computer Networks they can tell the class; avoid repeating</p>	<p><u>Prior Learning</u></p>	<p><i>Lesson Content in more detail on Lesson PowerPoint</i></p>

	<p>Target gaps in student's knowledge and areas for improvement</p> <p><i>This lesson could be completed with the assessment in a single lesson for high ability students</i></p>	<p>the Computer Networks assessment</p> <p>2. Complete review questions based on the assessment topics</p> <p>3. Engage in DIRT to make improvements to work</p>	<p>information (I CAN I WILL: Initiative). Teacher goes around room asking students for 1 fact/piece of information</p> <p><u>Main</u> Activity: Using their assessments, students reflect on how they performed and consider where they struggled most. (I CAN I WILL: Reflectiveness) (LO1) They then complete 3 questions based on the topics they struggled on the most (personalised learning)- 1 from each category (I CAN I WILL: Resilience, Drive) (LO2)</p> <p>Activity: Students look through their books and complete any improvements needed i.e. complete work, incorrect work, presentation, etc. (I CAN I WILL: Resilience, Reflectiveness) (LO3)</p> <p><u>Plenary</u> Kahoot: Whole Topic – Knowledge retention – same as Lesson 4 https://play.kahoot.it/v2/lobby?quizId=37fe22e6-79c9-4efc-a3e6-5611ca528b95 (I CAN I WILL: Reflectiveness, Drive, Risk Taking, Resilience). This acts as a good “make it stick” activity to test how much they remember</p> <p><u>Homework</u> Homework could be set for Starter for 10 for next topic</p>	<p>Students to have completed the assessment on Computer Networks</p> <p><u>Cross Curricular</u> Use of justification to explain answers – depth</p>	<p>Lesson PowerPoint</p> <p>Review questions completed are personalised and differentiated, but can be further through questions completed (not 1 from each category)</p>
			<p>Extra lessons on Networks can be found in the same folder.</p>		