

## Technology Learning Area Plan

<b>UNIT TITLE:</b>	Digital Systems and Networks
<b>UNIT OUTLINE</b>	<p>In this unit students will investigate the following questions:</p> <ul style="list-style-type: none"> <li>• What are the main <u>components</u> of common digital systems and how they do they connect together to form networks to transmit <u>data</u>.</li> <li>• How do information systems meet needs and consider sustainability?</li> <li>• What digital systems would a new school require and how would they connect together to form networks to transmit data?</li> </ul> <p>Computers are everywhere. We all need to learn how to use them, and many of us use them every day. But how do they work? How do they think? And how can people write software that is fast and easy to use? Computer science is a fascinating subject that explores these very questions. The simple and fun activities in this unit, designed for students in Years 5 and 6, introduce you to some of the building blocks of how computers work—without using a computer at all!</p>
<b>YEAR LEVEL ACHIEVEMENT STANDARD</b>	<p><u>TECHNOLOGY</u> <u>Design and Technologies</u></p> <p>By the end of Year 6, students <u>describe</u> competing considerations in the <u>design</u> of products, services and environments, taking into account sustainability. They <u>describe</u> how <u>design</u> and technologies contribute to meeting present and future needs. Students <u>explain</u> how the features of technologies impact on designed solutions for each of the prescribed technologies contexts.</p> <p>Students create designed solutions for each of the prescribed technologies contexts suitable for identified needs or opportunities. They <u>suggest</u> criteria for success, including sustainability considerations, and use these to <u>evaluate</u> their ideas and designed solutions. They <u>combine</u> <u>design</u> ideas and communicate these to audiences using <u>graphical representation techniques and technical terms</u>. Students <u>record</u> project plans including production processes. They <u>select</u> and use appropriate technologies and techniques correctly and safely to produce designed solutions.</p> <p><u>Digital Technologies</u></p> <p>By the end of Year 6, students <u>explain</u> the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. They <u>explain</u> how digital systems use whole numbers as a basis for</p>

	<p>representing a variety of data types.</p> <p>Students define problems in terms of data and functional requirements and <u>design</u> solutions by developing algorithms to address the problems. They incorporate decision-making, repetition and user interface <u>design</u> into their designs and implement their digital solutions, including a visual program. <b>They explain how information systems and their solutions meet needs and consider sustainability.</b> Students manage the creation and communication of ideas and information in collaborative digital projects using validated data and agreed protocols.</p>
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<p><b>CONTENT DESCRIPTORS</b></p>	<p><u>Design and Technologies</u></p> <ul style="list-style-type: none"> <li>• Examine how people in design and <u>technologies</u> occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use (<u>ACTDEK019</u>)</li> <li>• Critique needs or opportunities for <u>designing</u>, and investigate materials, <u>components</u>, tools, <u>equipment</u> and processes to achieve intended designed solutions (<u>ACTDEP024</u>)</li> <li>• Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques (<u>ACTDEP025</u>)</li> </ul> <p><u>Digital Technologies</u></p> <ul style="list-style-type: none"> <li>• Examine the main <u>components</u> of common digital systems and how they may connect together to form networks to transmit <u>data</u> (<u>ACTDIK014</u>)</li> <li>• Explain how student solutions and existing information systems are <u>sustainable</u> and meet current and future local community needs(<u>ACTDIP021</u>)</li> </ul>
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<p><b>ASSESSMENT</b></p>	<p>You have been employed to consult on the design of a school network for the new school being built at Mackillop Catholic College. You have been asked to create a map of a suitable school network that identifies the main components of the school's digital systems and how they would connect together to transmit data.</p> <p>You will need to consider how the network meets the school's present and future needs.</p>
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## DEVELOPING INQUIRING AND REFLECTIVE LEARNERS

Community Contributor  
 Leader and Collaborator

Effective Communicator  
 Active Investigator

Designer and Creator  
 Quality Producer

## CROSS CURRICULA PRIORITIES

<i>Catholic Ethos</i>	 <i>Aboriginal and Torres Strait Islander Histories and Cultures</i>	 <i>Asia and Australia's Engagement with Asia</i>
<p>The overarching purpose of Catholic schools of the past, as well as the future, is to bring the Good News of Jesus to all who hear it. In the midst of a world of educational, social and economic change the focus on the holistic growth of the individual remains the surest way catholic school can prepare students for the uncertainties of the future.</p> <p style="text-align: right;"><i>Defining Features, Diocese of Cairns</i></p> <p>The curriculum provides opportunities for young people to connect their curriculum experiences to a living Christian faith.</p>	<p>Active engagement of inclusive curriculum practices, which reflect Aboriginal and Torres Strait Islander perspectives, knowledge, histories, cultures and spirituality. A genuine commitment to Reconciliation, guided by principles of personal dignity, social justice and equity, which reflect the Gospel message and the mission of the Church.</p> <p>The curriculum provides opportunities to value and respect:</p> <ol style="list-style-type: none"> <li>1. Traditional knowledge and practices</li> <li>2. Culture and natural heritage</li> <li>3. Spirituality</li> </ol> <p>And to critically examine and/or challenge:</p> <ol style="list-style-type: none"> <li>1. Social constructs</li> <li>2. Prejudice and racism</li> </ol>	<p>This perspective requires students to develop skills, knowledge and understandings related to Asia and Australia's engagement with Asia.</p> <p>The curriculum provides opportunities to know, understand and be able to:</p> <ol style="list-style-type: none"> <li>1. Understand 'Asia'</li> <li>2. Develop informed attitudes and values</li> <li>3. Know about contemporary and traditional Asia</li> <li>4. Connect Australia and Asia</li> <li>5. Communicate effectively with people of the Asian region both within and outside Australia confidently</li> </ol>
 <i>Sustainability Education</i>	<i>Social Emotional Learning</i>	<i>Inclusive Education</i>
<p>Access to current information about environmental issues and promotion of a reflective and responsive attitude towards stewardship of the gifts of creation.</p> <p>The curriculum provides opportunities to reflect upon:</p> <ol style="list-style-type: none"> <li>1. The gift of creation</li> <li>2. An attitude of responsible stewardship</li> </ol> <p>And to critically examine and/or challenge:</p> <ol style="list-style-type: none"> <li>1. The impact of human interaction with the natural, built and social environment</li> <li>2. Current environmental issues</li> </ol>	<p>Social and emotional competencies are integral to academic and work success and are the basis of resilience, relational quality and social capital.</p> <p>The curriculum provides opportunities to develop:</p> <ol style="list-style-type: none"> <li>1. Self Awareness</li> <li>2. Social Awareness</li> <li>3. Responsible Decision Making</li> <li>4. Self-Management</li> <li>5. Relationship Management</li> </ol>	<p>It is by the quality of interactions and relationships that all students learn to understand and appreciate difference, to value diversity and learn to respond with dignity and respect to all through mutually enriching interactions.</p> <p>The curriculum provides equitable access for and/or positive interactions with students from different backgrounds and with diverse needs and abilities.</p>

## GENERAL CAPABILITIES

 <i>Literacy</i>	 <i>Numeracy</i>	 <i>Information and Communication Technology</i>	 <i>Critical and Creative Thinking</i>
<p>Students become literate as they develop the skills to learn and communicate confidently at school and to become effective individuals, community members, workers and citizens. These skills include listening, reading, viewing, writing, speaking and creating print, visual and digital materials accurately and purposefully within and across all learning areas.</p> <p>Literacy involves students engaging with the language and literacy demands of each learning area.</p> <p>As they become literate students learn to:</p> <ul style="list-style-type: none"> <li>• Interpret, analyse, evaluate, respond to and construct increasingly complex texts (Comprehension and composition)</li> <li>• Understand, use, write and produce different types of text (Texts)</li> <li>• Manage and produce grammatical patterns and structures in texts (Grammar)</li> <li>• Make appropriate word selections and decode and comprehend new (basic, specialised and technical) vocabulary (Vocabulary)</li> <li>• Use and produce a range of visual materials to learn and demonstrate learning (Visual information)</li> </ul>	<p>Students become numerate as they develop the capacity to recognise and understand the role of mathematics in the world around them and the confidence, willingness and ability to apply mathematics to their lives in ways that are constructive and meaningful.</p> <p>As they become numerate, students develop and use mathematical skills related to:</p> <ul style="list-style-type: none"> <li>• Calculation and number</li> <li>• Patterns and relationships</li> <li>• Proportional reasoning</li> <li>• Spatial reasoning</li> <li>• Statistical literacy</li> <li>• Measurement.</li> </ul>	<p>Students develop ICT competence when they learn to:</p> <ul style="list-style-type: none"> <li>• Investigate with ICT: using ICT to plan and refine information searches; to locate and access different types of data and information and to verify the integrity of data when investigating questions, topics or problems</li> <li>• Create with ICT: using ICT to generate ideas, plans, processes and products to create solutions to challenges or learning area tasks</li> <li>• Communicate with ICT: using ICT to communicate ideas and information with others adhering to social protocols appropriate to the communicative context (purpose, audience and technology)</li> <li>• Operate ICT: applying technical knowledge and skills to use ICT efficiently and to manage data and information when and as needed</li> <li>• Apply appropriate social and ethical protocols and practices to operate and manage ICT.</li> </ul>	<p>Students develop critical and creative thinking as they learn to generate and evaluate knowledge, ideas and possibilities, and use them when seeking new pathways or solutions. In learning to think broadly and deeply students learn to use reason and imagination to direct their thinking for different purposes. In the context of schooling, critical and creative thinking are integral to activities that require reason, logic, imagination and innovation. As they develop critical and creative thinking students learn to:</p> <ul style="list-style-type: none"> <li>• Pose insightful and purposeful questions</li> <li>• Apply logic and strategies to uncover meaning and make reasoned judgments</li> <li>• Think beyond the immediate situation to consider the 'big picture' before focussing on the detail</li> <li>• Suspend judgment about a situation to consider alternative pathways</li> <li>• Reflect on thinking, actions and processes</li> <li>• Generate and develop ideas and possibilities</li> <li>• Analyse information logically and make reasoned judgments</li> <li>• Evaluate ideas and create solutions and draw conclusions</li> <li>• Assess the feasibility, possible risks and benefits in the implementation of their ideas</li> <li>• Transfer their knowledge to new situations</li> </ul>

 <i>Ethical Behaviour</i>	 <i>Personal and Social Competence</i>	 <i>Intercultural Understanding</i>
<p>Students develop ethical behaviour as they learn to understand and act in accordance with ethical principles. This includes understanding the role of ethical principles, values and virtues in human life; acting with moral integrity; acting with regard for others; and having a desire and capacity to work for the common good.</p> <p>As they develop ethical behaviour students learn to:</p> <ul style="list-style-type: none"> <li>• Recognise that everyday life involves consideration of competing values, rights, interests and social norms</li> <li>• Identify and investigate moral dimensions in issues</li> <li>• Develop an increasingly complex understanding of ethical concepts, the status of moral knowledge and accepted values and ethical principles</li> <li>• explore questions such as: <ul style="list-style-type: none"> <li>○ <i>What is the meaning of right and wrong and can I be sure that I am right?</i></li> <li>○ <i>Why should I act morally?</i></li> <li>○ <i>Is it ever morally justifiable to lie?</i></li> <li>○ <i>What role should intuition, reason, emotion, duty or self-interest have in ethical decision making?</i></li> </ul> </li> </ul>	<p>Students develop personal and social competence as they learn to understand and manage themselves, their relationships, lives, work and learning more effectively. This involves recognising and regulating their emotions, developing concern for and understanding of others, establishing positive relationships, making responsible decisions, working effectively in teams and handling challenging situations constructively.</p> <p>As they develop personal and social competence students learn to:</p> <ul style="list-style-type: none"> <li>• recognise and understand their own emotions, values and strengths, have a realistic assessment of their own abilities and a well-grounded sense of self-esteem and self-confidence (Self-awareness)</li> <li>• manage their emotions and behaviour, persevere in overcoming obstacles, set personal and academic goals, develop self-discipline, resilience, adaptability and initiative (Self-management)</li> <li>• perceive and understand other people's emotions and viewpoints, show understanding and empathy for others, identify the strengths of team members, define and accept individual and group roles and responsibilities, be of service to others (Social awareness)</li> <li>• form positive relationships, manage and influence the emotions and moods of others, cooperate and communicate effectively with others, work in teams, build leadership skills, make decisions, resolve conflict and resist inappropriate social pressure (Social management).</li> </ul>	<p>Students develop intercultural understanding as they learn to understand themselves in relation to others. This involves students valuing their own cultures and beliefs and those of others, and engaging with people of diverse cultures in ways that recognise commonalities and differences, create connections and cultivate respect between people.</p> <p>As they develop intercultural understanding students learn to:</p> <ul style="list-style-type: none"> <li>• identify increasingly sophisticated characteristics of their own cultures and the cultures of others</li> <li>• recognise that their own and others' behaviours, attitudes and values are influenced by their languages and cultures</li> <li>• consider what it might be like to 'walk in another's shoes'</li> <li>• compare the experiences of others with their own, looking for commonalities and differences between their lives and seeking to understand these</li> <li>• reflect on how intercultural encounters have affected their thoughts, feelings and actions</li> <li>• accept that there are different ways of seeing the world and live with that diversity</li> <li>• stand between cultures to facilitate understanding</li> <li>• take responsibility for developing and improving relationships between people from different cultures in Australia and in the wider world</li> <li>• contribute to and benefit from reconciliation between Indigenous and non-Indigenous Australians.</li> </ul>

## LEARNING AND TEACHING STRATEGIES

WEEK	1	2	3	4	5	6	7	8	9	10
<b>LEARNING INTENTIONS</b>					<b>SUCCESS CRITERIA</b>					
Students will: <ul style="list-style-type: none"> <li>discover and map the location of devices connected to their school's network</li> <li>learn about the role of each device by either conducting web-based research or using the matching activity included</li> </ul>					I will be able to : <ul style="list-style-type: none"> <li>name devices on a computer network</li> <li>explain the purpose of certain devices on a computer network</li> </ul>					

Engage →

Explore →

Explain →

Elaborate →

Evaluate

<b>ENGAGE – NETWORK HUNT</b>	<b>RESOURCES</b>
<p><u>Introduction</u></p> <ul style="list-style-type: none"> <li>Write the words 'computer network' up on the board and lead a discussion with students as to what we might mean by this. What other 'networks' can students think of? <i>Family, friends, roads, rail.</i></li> <li>Guide a discussion to explain that the computers in the school are all connected together, creating a 'computer network'. Add that this network also contains other devices, and in this lesson students will be going on a hunt to see what devices they can discover.</li> </ul> <p><u>Activity 1: Discovering Devices</u></p> <ul style="list-style-type: none"> <li>Explain to students that they will be creating sketch maps of their school onto which they will record the devices they find. <i>If required, model creating a sketch map of your school on slide 3.</i></li> <li>Show slide 4 and explain that students will get copies of the 'What devices can you discover?' resource to help them spot and identify devices on their hunt around school. Challenge groups to try and find more devices than the other groups. Can they discover all the different devices?</li> <li>Divide your class into groups. Give each group sufficient copies of the 'What devices can you discover?' resource as well as paper, pens and clipboards to create their sketch maps.</li> <li>Groups should now have 20 mins to hunt around school for all the devices they can find and record the location of these on their sketch maps.</li> <li><b>Note:</b> <i>As an extension exercise students could have opportunity to go off site to find the nearest Telstra substation. This contains multiple switches providing a junction between all local homes/schools/business internet connections and the local telephone exchange.</i></li> </ul> <p><u>Activity 2: Role of the Devices</u></p> <ul style="list-style-type: none"> <li>Once groups have returned from their network hunt, share several student's sketch maps and lead a discussion to explore the different devices that groups have discovered and their locations.</li> <li>Explain that now we have identified the different devices on our school network, we need to develop our understanding of their roles.</li> </ul>	<p><u>Student Resources:</u></p> <ul style="list-style-type: none"> <li>Student worksheet: <a href="#">What devices can you discover?</a></li> <li>Student worksheet: <a href="#">Matching Activity</a></li> </ul> <p><u>Teacher Resources:</u></p> <p>Powerpoint – <a href="#">Network Hunt Lesson Presentation</a></p> <p><a href="#">Barefoot Computing Lesson Plan</a></p> <p>School Technician</p> <p><a href="#">Computer Systems Powerpoint</a></p>
	<b>ASSESSMENT OPPORTUNITIES</b>
	<p>Informal teacher assessment of students during main task and plenary. Focus on understanding of the different network devices and their roles.</p> <ul style="list-style-type: none"> <li>Formal assessment of students' sketch maps indicating devices identified and details of their role.</li> </ul>

- Students have 20 mins to learn about the roles of the devices on the computer network. This could be undertaken in a number of ways – please choose a method, or combination of methods, most suitable for your students
  - Students could complete, either individually or in pairs or as a class, the included matching activity.
  - Students can conduct web-based research on each device: **Note:** The Simple English Wikipedia ([http://simple.wikipedia.org/wiki/Main\\_Page](http://simple.wikipedia.org/wiki/Main_Page)) provides good clear explanations for some of the devices.
- Students should add key information about the role of each device to their sketch maps.

#### Activity 3: Plenary

- Lead a class discussion for students to share what they have learnt about the devices they discovered. **Note:** *The descriptions from the matching activity appear on slides 5 – 7 to support this discussion.*
- Provide an opportunity for students who have completed the extension activity (see below) to share this with the class.
- Working in pairs, students can make small signs with key information about the roles of the devices they have learnt about. These can be attached to the devices to help others (students and staff) learn about the computer network in their school.

#### **DIFFERENTIATION**

- **Support:** Use additional targeted questions during the main task to check basic understanding of computers being connected together and the key devices on the network: clients and server. You may wish to group less confident students with more confident students, which can support them.
- **Stretch & challenge:** Challenge students to explain how each of the devices they have learnt about would play a role in enabling them to conduct web-based research into the devices, e.g. *They have logged in to the network using a client computer. They have accessed the internet via the server – the switches would have let the computers ‘talk’ to each other to achieve this etc.*

#### **TECHNOLOGIES LANGUAGE**

Client, server hardware, software, peripheral device, input, output, memory, motherboard, processor, network, LAN, internet

## LEARNING AND TEACHING STRATEGIES

WEEK	1	2	3	4	5	6	7	8	9	10
<b>LEARNING INTENTIONS</b>					<b>SUCCESS CRITERIA</b>					
Students will: <ul style="list-style-type: none"> <li>• <b>understand computer networks</b> including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration</li> <li>• create a detailed map of the school network and explain how data is shared and transmitted</li> </ul>					I will be able to : <ul style="list-style-type: none"> <li>• understand how computer networks, including the internet connect to devices to offer communication and collaboration</li> <li>• create a detailed map of the school network and explain how some of it works</li> </ul>					

Engage →                      Explore →                      Explain →                      Elaborate →                      Evaluate

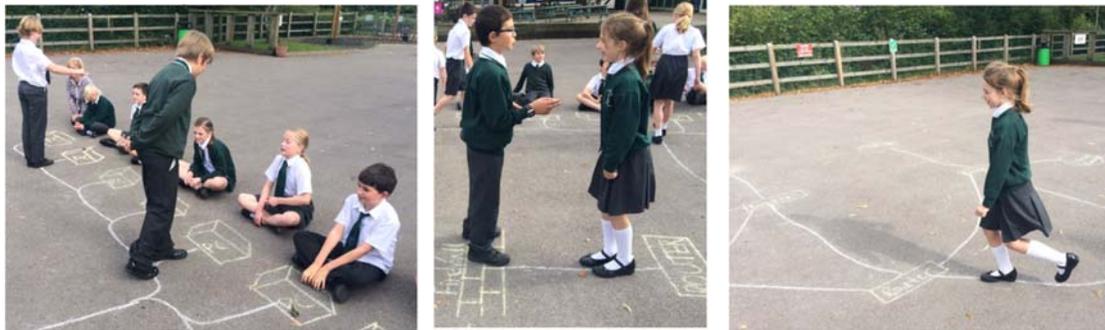
<b>EXPLORE AND EXPLAIN –SCHOOL NETWORK ROLE PLAY</b>	<b>RESOURCES</b>
<p><u>Introduction</u> Show students the network definition on slide 1 of the school computer network PowerPoint. Read the definition and then flip to slide 2, which has the words ‘group’, ‘interconnected’, ‘people’ highlighted in red. Now flip to slide 3 which highlights a family or friends network of interconnected people. Give students five minutes to map one of those networks in their lives.</p> <p><u>Activity 4:</u> <b>School Network Server</b> Move on to slide 4, which show a system of interconnected things in orange font. Remind students of the school computer network that is a system of interconnected things.</p> <p>Prior to the lesson, teacher should have an understanding their school network. Refer to the Lesson Plan attached for terminology and descriptions.</p> <p><b>Playground Preparation</b> Before the lesson, go out onto the playground/concrete area and mark in the main server, computers (PCs), laptops, switch, wireless access point, router, firewall and web sites. Don’t mark in the wires or wireless connections as you will do this in the lesson.</p> <p><b>Roleplaying the Network</b> Take your students outside and position them near to the model but not on it. Explain that those who concentrate and listen will get to take part in the model. In reality there are positions for everyone but it is good to have an incentive.</p> <p><b>Server</b> Start with the server - mention that it is the most important computer in the school and that it is typically 10 times more expensive than other school computers. Explain that it has a list of everyone's names who are allowed on the school network and that it holds everyone's saved files. It helps to mention</p>	<p><u>Student Resources:</u></p> <ul style="list-style-type: none"> <li>• <a href="#">Mapping Network Sheet</a></li> </ul> <p><u>Teacher Resources:</u> School Computer Network: <a href="#">Slideshow Network Lesson Plan pdf</a> Class Login Sheet Old switch Chalk</p>
	<b>ASSESSMENT OPPORTUNITIES</b>
	<p>Participation in Role Play Creation of School network Map and explanation of how to log into the network.</p>

specific projects that they have saved recently. Choose a sensible child to model the server and sit them behind your drawing of a server. Give them a class list to check when students try to logon.

**Switch** Now draw a line from the server to switch box. Explain that the switch carries signals from the server to every other computer on your network and back again. You may wish to show your students an old switch if you have one.

### Understanding a School Network Logon

Continue your line from your switch box to link up one of the **wired computers (PCs)**. Sit a child behind the PC and choose another child to carry the data requests from the PC. Ask the child to logon, what message should they send to the server? *Answer Username and Password*. If your school network uses passwords let your children say password instead of their real password for obvious reasons. The data child will now carry the username and password to the server along the wires. When they get to the server they will tell the server the information, the server will check this on the list and if it is the same will send them back to tell the computer to logon. Draw wires to connect the other wired computers and place children behind them and a child for each computer as the data.



**Opening Files** When you get to the last wired PC get them to logon like the first one did. Now ask them to think of a piece of work they saved recently. Ask them to send the data child to open the file and bring it back to work on. The data should go along the wires, through the switch and ask the server for the file before bringing it back for the computer. If it is saved and closed the data should take it back to the server. Discuss what would happen if the server allowed a student to access another student's files – would this be ethical?

### Connecting Wireless Computers

Now wire up the switch to the wireless access point. Explain that this converts the signal from data in a wire to data that can be carried through the air. Draw a dashed line to one of the wireless laptops. You may wish to logon and open a file to demonstrate that this uses the same procedure as the wired computers for logon and file opening.

### Connecting to the Internet

Explain that not every computer on the network is controlled by the server, iPads and android tablets don't logon to the server and many don't save work on the server either. However they do connect to the Internet through the school network. Connect up any tablets/Chromebooks you have drawn on your network by connecting the switch to the router by a solid line. Explain that this carries signals beyond the school all over the world to fetch web pages, emails, videos and other internet services. Now join the router to the firewall. Appoint a child to be the firewall and explain that their job is to check data to see if it has viruses before letting it in or out of the school.

If it does find a virus it locks the data down so it can be cleaned or deleted. Now connect up the firewall to the routers and websites. Model a child looking up a webpage on a tablet, laptop or PC, They send the data of to find the webpage, through the switch, through the router, through the firewall, through other routers until they find the web server. They collect the page and return it back to their original device. This takes less than half a second typically.

### Network Printing

You may wish to add a printer to your model and model an open document being sent to the server and then to the printer. On your school network your servers manage the printing queues. If you were at home the page would go straight to the printer. Discuss if the school's server could assist in improving the sustainability of the school environment in relation to paper usage/waste ie limit number of pages a student could print, power off when not in use / log in required at the printer to print etc



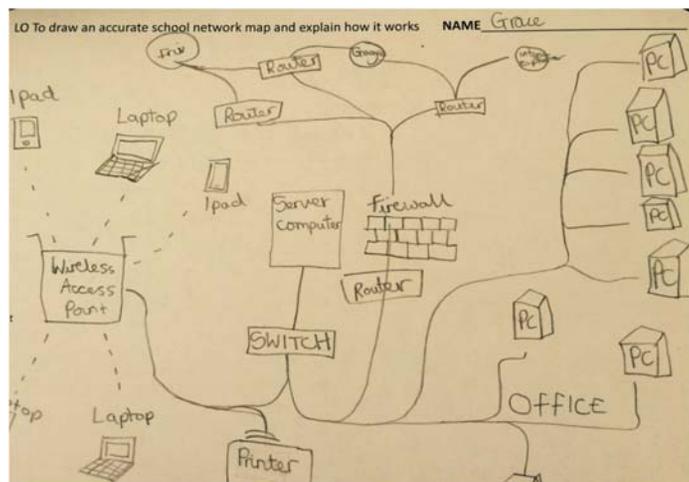
**The server checks the list to see if users can logon. Note the bottleneck that has built up because everyone is logging on at the same time**

### Network Roleplay

Make sure every computer has a data child. Before you start tell students that you will get them to swap roles half way through the roleplay. At the end of the roleplay lead a brief class discussion about what they found out. Did they spot any bottlenecks where lots of data was trying to do the same thing? The queue for the server is the obvious one. On larger networks there are often more than one servers to speed the process up.

### Creating their own Map

Get all students to leave the map. Explain that they are going to draw the network and explain how some of it works. Get them to look at the playground map and memorise the key features. Lead them back to class before handing out the network map sheets.



### DIFFERENTIATION

- **Support:** Use additional targeted questions during the main task to check basic understanding of how the network is connected to transmit data. You may wish to group less confident students with more confident students which can support them.

**Stretch & challenge:** Challenge students to identify areas of the school network where “bottlenecks” occur and offer possible reasons for the bottleneck.

### TECHNOLOGIES LANGUAGE

Client, server hardware, software, peripheral device, input, output, memory, motherboard, processor, network, LAN, internet, switch, wireless access point, router, firewall, wired network, wireless network, laptops, computers or PCs, iPads, tablets, bottleneck

## LEARNING AND TEACHING STRATEGIES

WEEK	1	2	3	4	5	6	7	8	9	10	
<b>LEARNING INTENTIONS</b>					<b>SUCCESS CRITERIA</b>						
Students will: <ul style="list-style-type: none"> <li>Complete a design of a school network</li> <li>Identify components of a digital system and</li> <li>Explain how the components of a digital system connect together to transmit data</li> </ul>					I will be able to : <ul style="list-style-type: none"> <li>design a school network</li> <li>Identify components of a digital system and</li> <li>Explain how the components of a digital system connect together to transmit data</li> </ul>						
<b>Engage →</b>					<b>Explore →</b>		<b>Explain →</b>		<b>Elaborate →</b>		<b>Evaluate</b>
<b>ELABORATE AND EVALUATE</b>								<b>RESOURCES</b>			
<p><u>Assessment Task:</u></p> <p>You have been employed to consult on the design of a school network for the new school being built at Mackillop Catholic College. You have been asked to create a map of a suitable school network, which identifies the main components of the school's digital systems and how they would connect together to transmit data.</p> <p>You will need to consider how the network meets the school's present and future needs.</p> <p>Please see Task Sheet and Criteria for details.</p>								<p><u>Student Resources:</u>            Task Sheet and Criteria Sheet            Notes and resources from previous lessons            A3 sheet of paper</p> <p><u>Teacher Resources:</u></p>			
								<b>ASSESSMENT OPPORTUNITIES</b>			
<b>DIFFERENTIATION</b>											
<ul style="list-style-type: none"> <li>Support:</li> <li>Stretch &amp; challenge:</li> </ul>											
<b>TECHNOLOGIES LANGUAGE</b>											

## Educational Modifications

CLASSROOM ACCOMMODATIONS	FOR WHOM
Seat near teacher	
Assign student to low- distraction area	
Seat near positive peer models	
Use support groups / cooperative learning	
Use rows instead of tables	
Use learning centre	
Use of time-out	
Stand near student when giving instruction	
Arrange classroom for safe visibility, accessibility and movement	
PRESENTATION OF LESSONS	FOR WHOM
Adjust work load, reduce assignments or give alternative assignments	
Use visual aids with oral presentation	
Teacher gives student outlines or study guides	
Ensure regular lesson revisits/reviews	
Highlight instructions (marker or highlighter tape)	
Give clear behavioural objectives	
Ask student to repeat instructions for clarification and understanding	
Use high- impact game-like materials	
Call on student often	
Acknowledgment effort put forth	
Give reminders for student to stay on task, monitor student is on task/topic	
Use large type/font and dark ink	
Keep page format simple	
Use visual prompts	
Divide page into clearly marked sections	
Remove distractions from paper	
ALTERNATIVE EVALUATION PROCEDURES	FOR WHOM
Reduce number of items	
Practice completely similar questions	
Arrange for oral testing	
Have support staff administer test	
Permit student to type or use word processing	
Adjust grading criteria based on individual	
Adjusted grading option	
NOTE TAKING STRATEGIES	FOR WHOM
Provide student the means to record	
Arrange for note taker e.g. Aide	
Give student a copy of notes	
Provide time for periodic review of student's notes (written, dictated, word processed)	
ORGANISATIONAL STRATEGIES	FOR WHOM
Use calendar to plan assignments	
Use of assignment notebook or work checklist especially diary	
Daily schedule	
Give time to organise desk during class	

AM check-in to organise for the day	
Lunch-time check-in to organise for PM	
PM check-out to organise for homework	
Arrange a duplicate set of classroom material for use at home	
Develop parent/school contract	
Training in time management	
<b>SUPPORT SERVICES</b>	<b>FOR WHOM</b>
Peer tutoring	
Cross-age tutoring	
Student buddy	
Work with school officer	
Meet with staff during available times	
Teach student to monitor own behaviour	
Implement behaviour contract/reward	
Self advocacy/communication skill training	
Conflict resolution strategies	
Other _____	

Adapted with permission from Positive Partnerships PD Facilitators Guide  
Module 5 Support materials

## **Appendix 3**

### **Assessment Task Sheet and Criteria Sheet**

# Assessment Task Sheet

**Student Name:**

**Year Level:**

**Name of Task:** School Network

**Teacher:**

**Learning Area/s:** Technologies

**Date Commenced:**

**Date Due:**

**Type of Task:**  Oral  Written  Other  
**Task Conditions:**  Individual  Pair  Group Work  
 In Class  Homework  Other  
**Opportunity Access:** to  Books  Notes  Library  Technology  
**Assessed By:**  Self  Peer  Teacher

## Task Description

You have been employed to consult on the design of a school network for the new school being built within the Diocese. The school will open next year with classes from Prep to Year 3 with two classes per year level. It will eventually hold classes from Prep to Year 6. You have been asked to create a map of a suitable school network, which identifies the main components of the school's digital systems and how they would connect together to transmit data.

You will need to consider how the network meets the school's present and future needs.

## Procedure:

1. Using the knowledge you have gained throughout the unit about digital systems and networks, decide which input/output devices will be required by the school. Consider how sustainable the system is and the school's current and future needs.
2. Once you have decided on the components of the school's digital systems, design a map that connects these components to the school's network. Ensure you have appropriately labelled the map.
3. You must submit a drawing of your map on A3 paper, along with a written explanation of how your system would meet the school's current and future needs. Your explanation must be at least 250 words in length and should include information on how the system will be sustainable in terms of social and environmental impact.

## Resources:

Notes, computers, internet

## CRITERIA SHEET TITLE

Criteria	A	B	C	D	E
The student work demonstrates evidence of:					
Identification of digital system components	Map contains extensive and comprehensive input and output devices	Map contains detailed input and output devices	Map contains a minimum of five input and output devices	Map contains some input and output devices	Map contains less than three input and output devices
Identification and labelling of how the digital systems are connected to form networks  Design ideas have been communicated using graphical representation and technical terms	Detailed and comprehensive labelling of how the digital systems connections are connected and how data is transmitted  Map has been neatly presented and connections are detailed and annotated using technical terms	Detailed labelling of how the digital systems connections are connected and how data is transmitted  Map has been neatly presented and connections are annotated using technical terms	Effective labelling of how the digital systems connections are connected and how data is transmitted  Map has been neatly presented and is able to understand. Some use of technical terms is evident.	Some labelling of how the digital systems connections are connected and how data is transmitted  Map has been completed but is difficult to understand	Minimal labelling of how the digital systems connections are connected and how data is transmitted.  Map has been not been completed.
Explanation of how the systems meets the school's current and future needs (sustainability / social / environmental)	Explanation exceeds 250 words and gives detailed and comprehensive explanation of how the network meets the schools current and future needs. Explanation explains how the network is sustainable in terms of social and environmental needs in detail with examples	Explanation exceeds 250 words and gives detailed explanation of how the network meets the schools current and future needs. Explanation explains how the network is sustainable in terms of social and environmental needs.	Explanation is 250 words and gives explanation of how the network meets the schools current and future needs. Some explanation of how the network is sustainable in terms of social and environmental needs has been supplied.	Explanation is less 250 words in length and gives a vague explanation of how the network meets the schools current and future needs. Explanation does not explain how the network is sustainable in terms of social and environmental needs.	Explanation was not submitted.

### Feedback

Signed:

Date: