

Lesson Topic	Cable Guy: Networking with Category 5 Cable
Concept Category	Computer Hardware and Operating Systems/Information Technology
Applicable Classes	Computer Applications Networking
Estimated Time Needed	1–3 hours
Intended Student Level	Secondary
NBEA Standards	<p><i>Information Technology II: Computer Architecture, P 82-91</i></p> <ul style="list-style-type: none"> • Describe current and emerging computer architecture; configure, install, and upgrade hardware; diagnose and repair hardware problems • Identify and use appropriate help resources • Apply structured cabling standards • Install and configure network components to implement a functional network
NE Frameworks Essential Learnings	<p><i>BE 12.14.1 Computer Hardware and Operating Systems</i></p> <ul style="list-style-type: none"> • Peripherals – select and utilize appropriate peripherals to assist with project work • Problem-Solving Techniques – diagnose hardware and supportive software issues • Selection of Systems – select systems appropriate for specific hardware, software and tasks
Links to Nebraska Standards	<p>R 12.1.1 – Students will identify the main idea and supporting details in what they have read</p> <p>M 12.4.7 – Students will apply deductive reasoning to arrive at a conclusion</p>
Purpose/Description	<p>Students will be able to build and assemble Category 5 cables.</p> <p>Students will be able to network a small number of computers together.</p> <p>Students will learn what a Category 5 cable is and how it functions. They will then observe the instructor create a Category 5 cable. Wiring diagrams and instructions can be found on the Internet at: http://www.lanshack.com/make-cat5E.asp.</p> <p>Students will then create their own Category 5 cable and be able to use it to connect a computer to the network. They may use the Internet as a guide to assemble the cables.</p>
Teaching Strategy	Demonstration and Application
Materials	<ul style="list-style-type: none"> • Category 5 wire • Connectors (as many as needed for the class) • Crimp tool

	<ul style="list-style-type: none"> • Scissors or sharp knife (only to be used under teacher supervision) • Computers with network capabilities (as many as needed) • Wiring diagrams <p>*Can be found on Internet (Great Instructions!) http://www.lanshack.com/make-cat5E.asp</p>
<p>Teacher Tips</p>	<p>Category 5 cables are the most common type of network cables installed today. They are unshielded twisted pair (UTP) cables and are rated based on standards developed by the Electronic Industries Association (EIA) and the Telecommunications Industries Association (TIA)</p> <p>UTP is not telephone wire, although it may look the same on the outside. There are only four copper wires inside a telephone line and they are not twisted.</p> <p>Most Category 5 cables have 4 twisted pairs of wire which help improve resistance to interference. If you look at the back of your computer and notice the cable that looks like a telephone cable, you will be looking at the Category 5 cable. This cable allows your computer to communicate with the Internet and the network server.</p> <p>There are many websites on the Internet to help you produce your own working Category 5 cables. You may purchase the cable from any computer store like Radio Shack or off of the Internet. You will be able to get as much or as little as you need, depending on your budget.</p> <p>Print out the wiring diagrams and cabling instructions available at http://www.lanshack.com/make-cat5E.asp.</p> <p>These wiring diagrams are great and will walk you through all of the steps necessary to create the cables.</p> <p>This type of procedure will take some practice, so make sure you let the students know that their first attempt may not work successfully! I suggest making a couple of Category 5 cables and testing them out before you demonstrate it to the students. The best way to test them would be to plug them into the computer and the network jack on the wall and open up the Internet. If you can browse the Internet, then you were successful with your cable!</p>
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