8	



COVERIMENT PROPERTY

40

Lesson Exemplar for TLE



PILOT IMPLEMENTATION OF THE MATATAG K TO 10 CURRICULUM

Lesson Exemplar for TLE Grade 8 Quarter 4: Lesson 4 (Week 4) SY 2025-2026

This material is intended exclusively for the use of teachers participating in the pilot implementation of the MATATAG K to 10 Curriculum during the School Year 2025-2026. It aims to assist in delivering the curriculum content, standards, and lesson competencies. Any unauthorized reproduction, distribution, modification, or utilization of this material beyond the designated scope is strictly prohibited and may result in appropriate legal actions and disciplinary measures.

Borrowed content included in this material are owned by their respective copyright holders. Every effort has been made to locate and obtain permission to use these materials from their respective copyright owners. The publisher and development team do not represent nor claim ownership over them.

Development Team				
 Writer: Jan Vincent H. Leuterio, MTTE (Mindanao State University-Iligan Institute of Technology) 				
 Validator: Victor S. Rosales, PhD (Mindanao State University-Iligan Institute of Technology) 				
Management Team				
Philippine Normal University Research Institute for Teacher Quality SiMERR National Research Centre				

Every care has been taken to ensure the accuracy of the information provided in this material. For inquiries or feedback, please write or call the Office of the Director of the Bureau of Learning Resources via telephone numbers (02) 8634-1072 and 8631-6922 or by email at blr.od@deped.gov.ph

TLE / QUARTER 4/ GRADE 8

I. C	I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES				
A.	Content Standards	Demonstrate an understanding of the consumables and component parts in industrial arts services.			
B.	Performance Standards	The learners perform simple diagnostics and simple troubleshooting in industrial arts services.			
c.	Learning Competencies and Objectives	 Learning Competency Discuss the component parts of industrial arts services Learning Objectives At the end of the lesson, the students are expected to: Identify and describe the key components of a home electrical system, including service panels, circuit breakers, outlets, switches, wires, and grounding systems. Identify and describe electrical circuits. Identify and describe electrical circuits. 			
D.	. Content	 Home Electrical System Electrical Circuit Electronic Circuit 			
E.	Integration	Integrating SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action) into the component parts of electronics and electrical services involves adopting practices and innovations that minimize environmental impact and encourage sustainability. In energy consumption it helps continue to focus on reducing the energy consumption of electronic devices while they are in use, through energy-efficient design and encouraging users to adopt energy-saving settings. In user awareness it can educate users on responsible consumption practices, such as proper device maintenance, energy-saving habits, and the environmental impacts of their technology use.			

II. LEARNING RESOURCES

Das, S. (2019, July 17). *What is an Electronic Circuit?* | *Electronic Circuits for Beginners*. Electronics Tutorial | Best Electronics Tutorial Website. <u>https://www.electronicsandyou.com/what-is-an-electronic-circuit.html</u>

Electrical, components, resistors, capacitors, electronics - free ... (n.d.). Www.google.com. <u>https://images.app.goo.gl/pNFMoL8cKzjErr4PA</u> Instructables. (2011, December 22). *Basic Electronics*. Instructables; Instructables. <u>https://www.instructables.com/Basic-Electronics/</u> Samano, H. (n.d.). *Residential Electrical System Basics – IAEI Magazine*. <u>https://iaeimagazine.org/electrical-fundamentals/residential-electrical-system-basics/</u> Series Parallel Circuit Stock Illustrations – 54 Series Parallel ... (n.d.). Www.google.com. <u>https://images.app.goo.gl/TONEgqc47nExBvFW6</u> Series vs Parallel Circuits: What's the Difference? (n.d.). The Spruce. <u>https://www.thespruce.com/series-and-parallel-circuits-the-basics-1152850</u> This is an Overview of How an Electrical System Works. (n.d.). The Spruce. <u>https://www.thespruce.com/how-an-electrical-system-works-1152759</u> Types & Components of Electric Circuits Video. (2021). Types & Components of Electric Circuits - TExES Class (Video) | Study.com. Study.com. <u>https://study.com/academy/lesson/types-components-of-electric-circuits.html</u>

What Is Electric Circuit With Symbols, And Formulas Used. (n.d.). BYJUS. <u>https://byjus.com/physics/electric-circuit/</u> *What is an Electronic Circuit?* (n.d.). VEDANTU. <u>https://www.vedantu.com/evs/what-is-an-electronic-circuit</u>

III. TEACHING AND LEARN	NOTES TO TEACHERS	
A. Activating Prior Knowledge	DAY 1 1. Short Review: 4 pics 1 word Directions: The teacher calls a representative from the class. The chosen learners identify the pictures and guess the words represented by the four pictures shown. A. A. Image: A contract of the picture	The learners guess and identify the picture. Answer key: A. Switch B. Outlet C. Battery Switch: Nintendo Switch Review Trusted Reviews. Title: Nintendo Switch Review Trusted Reviews. (n.d.). Www.google.com. Retrieved March 9, 2024, from
	B.	https://images.app.goo.gl/cFC5h8zu LPjgz1UL8 <i>Title: Light Switch Images</i> <i>Free</i> <i>Photos, PNG Stickers, Wallpapers</i> (n.d.). Www.google.com. Retrieved March 9, 2024, from https://images.app.goo.gl/7AaG7BYE bZAfu9uL6
		Title: Family Switch (2023) Movie Poster sold by Corabella Lynching SKU (n.d.). Www.google.com. Retrieved March 9, 2024, from https://images.app.goo.gl/rHjGqRMk UrX5TdKU8 Title: Power,button,power button,off,switch - free image from
	2. Feedback (Optional)	needpix.com. (n.d.). Www.google.com. Retrieved March 9, 2024, from https://images.app.goo.gl/2e2LwuN5 zJH313Ew8

		The teacher can add more pictures for the students to identify based on the given samples.
B. Establishing Lesson Purpose	 1. Lesson Purpose The teacher asks the learners what electrical components that they can observe inside the classroom. Encourage students to share if they have the same components (brand, form). After establishing the sharing of students, the teacher will present the lesson objectives. At the end of the lesson, the students are expected to: A. Identify and describe the key components of a home electrical system, including service panels, circuit breakers, outlets, switches, wires, and grounding systems. B. Identify and describe electrical circuits. C. Identify and describe electronic circuits 2. Unlocking Content Vocabulary Amalog - refers to signals derived from physical phenomena that also may be interpreted as signals representing physical measurements. (Techopedia, 2019) Digital - relating to, or utilizing devices constructed or working by the methods or principles of electronics. (Definition of Digital, 2019) Decoders - an electronic device that converts signals from one form to another. (<i>Definition of DECODERS</i>, 2024) 	What is an Amplifier? - Definition from WhatIs.com. (n.d.). WhatIs.com. https://www.techtarget.com/whatis /definition/amplifier What is Analog? - Definition from Techopedia. (2019). Techopedia.com. https://www.techopedia.com/defini tion/784/analog Definition of DIGITAL. (2019). Merriam-Webster.com. https://www.merriam-webster.com /dictionary/digital Definition of DECODERS. (2024, March 6). Www.merriam-webster.com /dictionary/decoders Definition of ENCODERS. (2024, March 4). Www.merriam-Webster.com. https://www.merriam-webster.com /dictionary/decoders

C. Developing and Deepening Understanding

DAY 1 AND 2 SUB-TOPIC 1: Home Electrical System

SOB-TOFIC T. Home Electrical S

1. Explicitation

Your home's electrical system is like a team, with many different parts working together to light up your house and power all your gadgets. If one part of the team isn't doing its job, the whole system can have issues, and you or your family might need to figure out what's wrong. Sometimes, you can fix small problems yourself, but other times, you'll need to call in a pro, like a certified electrician, to help out. Knowing the basics of how your home's electricity works is really helpful. This way, you can spot when something's wrong and better understand what to do next.

Home Electrical System Components

Service Head	What Is a Weatherhead? (n.d.). Www.google.com. https://images.app .goo.gl/2dHzXr9YJ <u>3unnoUj8</u>	The service head anchors the three service wires to the home. From there, the wires are directed down to the electric meter.
Electric Meter	Hydro Quebec meter solid state.jpg - Wikipedia. (n.d.). Www.google.com. https://images.app.g oo.gl/uV56pkKT4LoP AGgZ7	Electric Meter, or KiloWatt-hour Meter, measures the amount of electric energy a consumer uses. An electric power company uses electric meters to measure the amount of electricity consumed by each customer.
Service Panel	laeimagazine.org. https://iaeimagazine.o rg/wp-content/uploads /2022/01/2022-01-He rman-PH1.jpg	A service panel, also known as a fuse box or breaker box, or main breaker panel, is found in every home. It is usually located in the basement or garage and is easily identified by its metal casing. This is the heart of the electrical system and its

Note: The teacher will have the first sub-topic for two (2) days/meetings. On the first day will be the topic discussion and work example. The lesson activity will serve as an assignment, and the next day, students will share and discuss.

		purpose is to distribute power to each circuit in the home. A circuit breaker or fuse is used to protect each circuit by opening it in case of a short circuit or an overload.
Branch Circuits Wiring of fuse box.v Wikimedii (n.d.). Www.goo, https://in oo.gl/AK6 kNo99	of European JPG - a Commons. gle.com. <u>mages.app.g</u> 5 <u>ONYAkbAxj</u>	A portion of a wiring system in the interior of a structure that extends from a final overload protective device to a plug receptacle or a load such as a lighting fixture, motor, or heater. There can be any number of receptacles, switches, lights or other devices attached to each circuit. If an appliance requires large amounts of electricity, a separate circuit is run exclusively for that appliance.
Switches Switches Zhafri (n.d.). Www.gu https:// .goo.gl/ 6uQyoo	ches Khairil Flickr. oogle.com. <u>/images.app</u> / <u>DKkA41Eu</u> <u>G6g7</u>	Switches come in many different styles. There are single-pole, three-way, four-way, dimmer, and motion-sensing switches. Their purpose is to turn on and off a circuit from different places in your home. Switches control lighting, ceiling fans, receptacles, and appliances. Switches have different amperage ratings depending on the load requirements.
Receptacles or Outlets Electrica Stock CO StockSn Www.go https:// o.gl/8dh wS6	al Outlets Free CO Photo - ap.io. (n.d.). ogle.com. 'images.app.go wx.JzH7SyhUe	Receptacles, commonly referred to as outlets, are used to provide individual plug-in points for power distribution. The housing market most frequently uses 240-volt outlets rated at 15- and 20-amp receptacles for general household equipment. For appliances such as 240-volt window air-conditioning units, a 240-volt 30-amp outlet is required.
2. Worked Example		









 communication, computing, automation, signation others. Electronic circuits form the backbone of model being fundamental to the functioning of virtur basics of electronic circuits, including their essential for anyone looking to delve deeper engineering. Passive and Active Components Passive and Active Components Passive components or device- are components the current in the circuit. Ex. Resistors, capacitors, inductors and etc. Active components- are components that voltage and current in a circuit. Ex. Diode, transistor, integrated circuits (IC) 	Tewalt, T. (n.d.). Voltage and resistors. Wisc-Online OER. https://www.wisc-online.com/ learn/technical/electronics-dc /dce15207/voltage-and-resisto rs Bartelt, T. (n.d.). Variable resistors. Wisc-Online OER. https://www.wisc-online.com/ learn/technical/electronics-dc /dce1202/variable-resistors Hoppe, P. (n.d.). Capacitors: What's inside? Wisc-Online OER. https://www.wisc-online.com/1 earn/technical/electronics-dc/d	
Resistors Devices that resist the flow of electric current, used to control the level of current passing through them.	Lovely Resistors These are some interesting larger-sized (Flickr. (n.d.). Www.google.com. https://images.app.goo.gl/ Htps5xfDUGPi6iJi7	 cean/technical/tectnonics-de/d ce9704/capacitors-whats-inside Hoppe, P. (n.d.). <i>Capacitors</i>. Wisc-Online OER. https://www.wisc-online.com/ learn/technical/electronics-dc /dce9604/capacitors
Capacitors Components that store and release electrical energy, used for filtering, buffering, and timing applications.	Capacitors (7189597135).jpg Wikipedia. (n.d.). Www.google.com. https://images.app.gop.gl /YTBSvNGPfsOyt9ca6	Bartelt, T. (n.d.). Inductors. Wisc-Online OER. https://www.wisc-online.com/ learn/technical/electronics-ac /ace11305/inductors Bartelt, T. (n.d.). The basic operation of a diode. Wisc-Online OER. https://www.wisc-online.com/ learn/technical/electronics-sol id-state/sse5704/the-basic-op eration-of-a-diode Bartelt, T. (n.d.). The semiconductor diode.



Analog electronic circuits operate with signals that smoothly and continuously change over time, reflecting the information they convey. Examples of devices predominantly using analog circuits include voltage and power amplifiers, tuning mechanisms, as well as radios and televisions.

Digital circuits work with signals that take on one of two distinct levels—either ON or OFF, 0 or 1, True or False. These circuits utilize transistors to form logic gates that execute Boolean operations. Examples of digital circuit applications include multiplexers, demultiplexers, encoders, decoders, counters, and flip-flops.

Mixed-signal circuits, also known as hybrid circuits, incorporate features of both analog and digital circuits. Examples of such circuits include comparators, timers, phase-locked loops (PLLs), analog-to-digital converters (ADCs), and digital-to-analog converters (DACs), blending the continuous variability of analog signals with the binary precision of digital signals.

2. Worked Example

In a bag put any type of electronic components mentioned in the discussion that you can collect. Call some of the students and pick a component from the bag and let the student identify what is the component and ask if it is a passive and active component.

3. Lesson Activity

Please refer to the student worksheet no. 3.

ANSWER KEY:

Component	Name	Passive or Active	Symbol
	RESISTOR	PASSIVE	——W——
	CAPACITOR	PASSIVE	
	INDUCTOR	PASSIVE	-1111-

		TRANSISTOR	ACTIVE		
		DIODE	ACTIVE		
D. Making Generalizations	 DAY 4 1. Learners' Takeawa The teacher will prepar grouped into teams. Ea answer will be given a p will be awarded with ac Sample questions for What device is u appliances and What is the max most residential What is the max most residential What device is u the circuit? What component Which component 2. Reflection on Lear The learners will answer How well can I such as service Can I different components, fur 	Ays: Quiz bowl e five questions generalises ch question will be pression of the property of the lditional points. Quiz bowl: used to measure the amore circuits in a residential simum amperage rating l systems? used to control the flow of the is used to oppose the ent stores electrical char ming er the following reflection identify and describe the panels, circuit breakers tiate between electrical metions, and application	izing the topic. Then the sented then all teams with the most correct answer ount of electricity consu- electrical system? for standard household of current in a circuit by flow of current in a circuit by flow of current in a circuit by flow of current in a circuit ge in an electric field? In questions: he key components of a s, outlets and switches. and electronic circuits?	e students will be ill answer. Every correct r will be the winner and umed by various d electrical outlets in y opening or closing suit? home electrical system, uits in terms of their	Note: The teacher may revise or develop another activity but still align with the objective. Answer key: 1. Electric meter 2. 15 or 20 amperes 3. Switch 4. Resistor 5. Capacitor Note: The teacher may revise or develop another questions for the students to reflect

IV. EVALUATING LEARNING	NOTES TO TEACHERS				
A. Evaluating Learning	 DAY 4 1. Formative Assessment Multiple Choice Directions: Choose the left 1. What is the main purphing a. To measure electrons b. To provide accessing the construction of the flow of the provide accessing the construction of the flow of the provide accessing the construction of the constr	 Answer key: 1. d. To protect against overloading and short circuits 2. a. To turn the power on and off 3. a. To utilized electrical energy 4. d. None of the choices 5. c. Diode 			
B. Teacher's Remarks	Note observations on any of the following areas:	Effective Practices	Problems Encountered	The teacher may take note of some observations related to the effective practices and	
	strategies explored			problems encountered after utilizing the different strategies, materials used,	

	materials used learner engagement/ interaction Others		learner engagement and other related stuff. Teachers may also suggest ways to improve the different activities explored/ lesson exemplar.
C. Teacher's Reflection	Reflection guide or promp principles behind What principles at Why did I teach th students What roles did my What did my stud what could I have What can I explore	t can be on: <u>the teaching</u> nd beliefs informed my lesson? ne lesson the way I did? y students play in my lesson? lents learn? How did they learn? e done differently? e in the next lesson?	Teacher's reflection in every lesson conducted/ facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.