8

DepED
DEPARTMENT OF EDUCATION

# Lesson Exemplar for TLE

Quarter 4
Lesson
8

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



**Development Team**

**Writer:**
- Christopher T. Dumadag, 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

**TLE/ QUARTER 4 / GRADE 8**

| **I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES** | |
|---|---|
| **A. Content Standards** | Demonstrate an understanding of the concepts and principles in performing simple diagnostics and simple troubleshooting 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**<br>● Discuss simple diagnostics in industrial arts services.<br>● Perform simple troubleshooting in industrial arts services.<br>● Discuss repair service costs in industrial arts.<br>**Learning Objectives**<br>At the end of the lesson, the students are expected to:<br>1. Identify diagnostic and troubleshooting techniques used in automotive and small engine services.<br>2. Apply diagnostic techniques to identify faults.<br>3. Use diagnostic tools and equipment to analyze automotive and small engine systems.<br>4. Analyze diagnostic findings and apply troubleshooting procedures.<br>5. Determined total material costs accurately.<br>6. Estimate labor costs associated with service activities.<br>7. Calculate total service costs. |
| **D. Content** | ● Diagnostics and troubleshooting in automotive and small engine (automotive servicing, motorcycle/ small engine servicing)<br>● Service Cost |
| **E. Integration** | Emissions from motor vehicle exhaust systems generate greenhouse gases that contribute to climate change. Therefore, learners need to adopt environmentally responsible practices as drivers/owners of vehicles and technicians during diagnostic and troubleshooting processes.<br>Learners need to adopt environmentally responsible practices as drivers/owners of vehicles and technicians during diagnostic and troubleshooting processes. This lesson can be integrated and related to<br><br>**SDG 7: Affordable and Clean Energy:** This lesson aims to assist learners in recognizing vehicles that use clean energy and automotive and motorcycle shops that practice responsible waste disposal. |

| | |
|---|---|
| | **SDG 12: Responsible Consumption and Production:** This lesson helps learners incorporate eco-friendly products into automotive and motorcycle practices.<br>**SDG 13: Climate Action:** This lesson also encourages learners to act by disseminating information to drivers about the consequences of having a faulty exhaust system and its impact on climate change. |

## II. LEARNING RESOURCES

**Reading Materials (Online)**


Carreon, H. N. (2021, June 1). *Use your 4 senses to detect potential car issues*. Zigwheels. https://www.zigwheels.ph/car-feature-stories/use-your-4-senses-to-detect-potential-car-issues

Complete Computer Diagnostics and Analysis. (n.d.). Doc Motor Works. https://www.docmotorworks.com/computer-diagnostics/

Fontaine, R. (2023, February 24). *What is computer diagnostics in auto repair?* https://www.linkedin.com/pulse/what-computer-diagnostics-auto-repair-ralph-fontaine/

Haltech(2024). Diagnostic Trouble Code (DTC) Index Haltech.com. https://support.haltech.com/portal/en/kb/articles/diagnostic-trouble-code-dtc-index

Leanse, A. (2017, November 14). How to diagnose car problems if you don't know much about cars. Popular Mechanics. https://www.popularmechanics.com/cars/a24471/diagnose-car-problems/

Twin, A. (2020). How Replacement Costs Work. Investopedia. https://www.investopedia.com/terms/r/replacementcost.asp

*What are Automotive Diagnostic Tools?* (n.d.). Www.linkedin.com,.https://www.linkedin.com/pulse/what-automotive-diagnostic-tools-mahesh-mukati/

*What Is Labor Cost? Definition, Direct vs. Indirect Costs and Examples*. (n.d.). Indeed Career Guide. https://www.indeed.com/career-advice/career-development/labor-cost


**Video Resources**


BLS Videos. (2022, October 9). *Understanding unit labor costs* [Video]. YouTube. https://www.youtube.com/watch?v=XJGl04elEPI

BRP Training Institute. (2018, April 18). *How-To Electrical Diagnostics and Troubleshooting* [Video]. YouTube. https://www.youtube.com/watch?v=9zYICTmcnWM

GLI Construction Services. (2023, July 18). *Arawan vs. Pakyawan (Usapang Construction)* [Video]. YouTube. https://www.youtube.com/watch?v=aKkQM3jMJVk

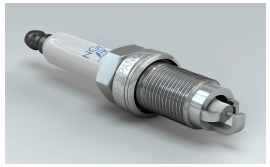
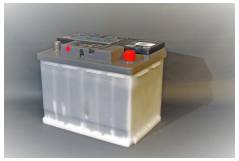
Jeep Doctor PH. (2021, June 1). *Paano Gumamit ng Diagnostic OBD Scan Tool - Thinktool Thinkscan MAX* [Video]. YouTube. https://www.youtube.com/watch?v=Ir1ATItAI1s

The Engineers Post. (2022, August 21). *Every dashboard warning lights in your car explained | Part - 1* [Video]. YouTube. https://www.youtube.com/watch?v=k13sZJlJ6Ag


**Suggested ReadingBooks**


Tom Denton (2017). *Advanced Automotive Fault Diagnosis. Automotive Technology. Vehicle Maintenance and Repair*. Taylor & Francis Limited

| III. TEACHING AND LEARNING PROCEDURE | | NOTES TO TEACHERS |
|---|---|---|
| **A. Activating Prior Knowledge** | **DAY 1**<br>**1. Short Review**<br>**Identification:** Let the students identify the basic components and parts of a motor vehicle and let them discuss its functions, such as battery, alternator, starter motor, radiator tank, fan, and tires.<br><br>**Note:** If your school has a stable internet connection, you may integrate ICT, such as Kahoot.<br><br>**2. Feedback (Optional)**<br>• Following the activity, ask whether the participants feel they have gained clarity on the components of a motor vehicle.<br>• If the students are already clear about the various components, you may proceed to discuss the diagnostics and troubleshooting in the automotive and small engine (automotive servicing, motorcycle/ small engine servicing) and Service Cost. | **Reminder:**<br>The writer only suggests the allotment of days. Teachers can determine the allotment depending on the type of learners they have and the complexity of the given topics and activities.<br><br>In cases where teachers lack diagnostic and troubleshooting devices, they may focus solely on discussing the diagnostic and troubleshooting techniques they can use. |
| **B. Establishing Lesson Purpose** | **1. Lesson Purpose**<br>Please encourage students to reflect on common issues they have encountered or are aware of when using a car or motorcycle. Prompt them to consider how they address these issues or how drivers and automotive technicians typically diagnose and troubleshoot them. Let them share their experiences and insights with the class.<br><br>After the sharing, state the topic and the objectives.<br>At the end of the lesson, the students will be able to:<br>1. Identify diagnostic and troubleshooting techniques used in automotive and small engine services.<br>2. Apply diagnostic techniques to identify faults.<br>3. Use diagnostic tools and equipment to analyze automotive and small engine systems.<br>4. Analyze diagnostic findings and apply troubleshooting procedures.<br>5. Determined total material costs accurately.<br>6. Estimate labor costs associated with service activities.<br>7. Calculate total service costs<br>**2. Unlocking Content Vocabulary** | |

| | | |
|---|---|---|
| | • **Diagnosing-** Identifying the cause or root of the problem.<br>• **Troubleshooting-** Finding the solution to the problem.<br>• **Repairing-**. Restoring the proper functionality of a device.<br>• **Symptom(s)** –The user, operator, and technician (vehicle) notice.<br>• **Fault(s)** – The error(s) in the system that result in the symptom(s).<br>• **Root cause(s)** – The cause(s) of the fault.<br>• **Service Cost-** The costs associated with providing their services. | |
| **C. Developing and Deepening Understanding** | **DAY 1**<br>**SUB-TOPIC 1: Sensory/Visual Inspection**<br>**1. Explicitation:**<br>Let the students identify the components of a vehicle and explain its uses.<br>  <br>Close-up of a Car Dashboard Display by Alex P, from Pexels<br>  <br>Image from Yoofactory<br>  <br>SparkPlug ILZKBR7A from Wikimedia Commons<br>  <br>Image from PxHere<br>  <br>Image from PxHere<br>1 2 3 4 5<br>After ensuring they can identify the components and their uses. Ask the students if they encountered or observed problems while riding a vehicle.<br>**Guide Questions:**<br>• What do you think the technician or driver would do if they encountered problems in a vehicle?<br>• Are you familiar with the symbols on the dashboard of a vehicle?<br>• How do these symbols in the dashboard help the technician/driver diagnose the problem?<br>• What other techniques does the technician use to determine the problem?<br><br>Diagnosing and troubleshooting automotive and small engine problems can be annoying if you do not know how to do it. The first step is to use sensory skills. | You may decide how much time you will give your students for the activity.<br><br>**Answer Key**<br>1. Dashboard<br>2. Radiator tank<br>3. Sparkplug<br>4. Battery<br>5. Steering Wheel: |

**1. Visual Inspections-** Observe your car/motorcycle and its surroundings, especially under the vehicle.

- **Warning Lights—**Check the dashboard, check engine lights, and observe other unusual warning lights.

| | | | |
|---|---|---|---|
| Anti-Lock Brake System Light | Check Engine Light | Battery Light | Temperature Warning Light |
| Tire Pressure Monitoring System | Door Ajar Light | Airbag Light | Oil Pressure Light |

- **Smell**
- **Sound**
- **Touch/Feel**

**2. Worked Example**
**Class sharing**

- Let the students share their experiences using their senses in diagnostic and troubleshooting.

**Guide questions!**

1. Describe when you used your sense of sight to identify an issue with a vehicle. What visual clues led you to diagnose the problem?"
2. "Recall an instance where a sound from a vehicle alerted you to a potential issue. What was the sound, and what did you infer from it?"
3. "Have you ever noticed a particular smell or felt something unusual while riding a vehicle that helped you pinpoint a malfunction? Please share your experience.

**3. Lesson Activity**: **Sensory Diagnostics in Automotive and Small Engine Servicing**

**Objective:** Apply sensory techniques (sight, sound, touch, and smell) to diagnose common vehicle problems.

**Materials Needed:**

| | |
|---|---|
| Visual aids of vehicle parts | Audio recordings of vehicle sounds |
| Real or model vehicle components | Worksheets for notetaking |

**Instructios:**

- Divide the class into small groups.

**Click the given link for more information:**
https://www.zigwheels.ph/car-feature-stories/use-your-4-senses-to-detect-potential-car-issues

**Answer Key**
**1.Answer:** Inspect the tires for deflation or damage and replace or repair them as necessary. (Flat Tire) Visual Inspection or Sight/Touch or Feel

| | | |
|---|---|---|
| | • Provide each group with a scenario describing a vehicle issue.<br>• Students use their sensory diagnostic skills to identify the potential problem and suggest troubleshooting steps.<br>• Let them share their answer in class.<br>• Encourage their classmate to ask questions.<br>• Provide rubrics for the presentation.<br><br>**Sample Scenario:**<br>1. The vehicle pulls to one side, and a flapping noise comes from a wheel.<br>2. There is a high-temperature gauge, and steam comes under the hood.<br>3. A sweet smell comes from the front of the car.<br>4. The air conditioning is blowing warm air instead of cold.<br>5. There is a delay in vehicle movement after shifting gears.<br>**DAY 2**<br>**SUB-TOPIC 2: Diagnostic Scanners**<br><br>**1. Explicitation:**<br>Ask the students if they encountered technicians using modern tools/devices to diagnose the problem in a vehicle.<br>**Guide Questions:**<br>• Why do you think vehicle owners prefer to bring their vehicle for repair to a service center than any technician or repair shop?<br>• What devices you observe do technicians use to make troubleshooting faster and more efficient?<br>• Which troubleshooting do you prefer to use? Sensory skills or computer tools/devices?<br><br>Modern vehicles have advanced computer systems known as **Electronic Control Units (ECUs**), which manage various vehicle functions based on sensor data. These sensors monitor the car's performance, including engine operation, emissions, and fuel efficiency. However, diagnosing problems with these complex systems can only be possible with specialized tools. This is where computer diagnostics comes into play.<br>**Computer diagnostics** involves using sophisticated equipment to analyze the sensor data and provide mechanics with a detailed report on the vehicle's condition. This report lets | **2. Answer:** Inspect the coolant level and radiator for leaks. (Engine Overheating) Visual Inspection or Sight/Touch or Feel<br>**3. Answer:** A sweet smell usually indicates a coolant leak, which could come from the radiator or hose connections. (Smell) (Coolant Leak)<br>4. **Answer:** Touch. A lack of refrigerant due to a leak or a failing compressor could be the cause,<br>**5. Answer:** This could signal transmission fluid issues or internal transmission wear. Hearing and Touch |

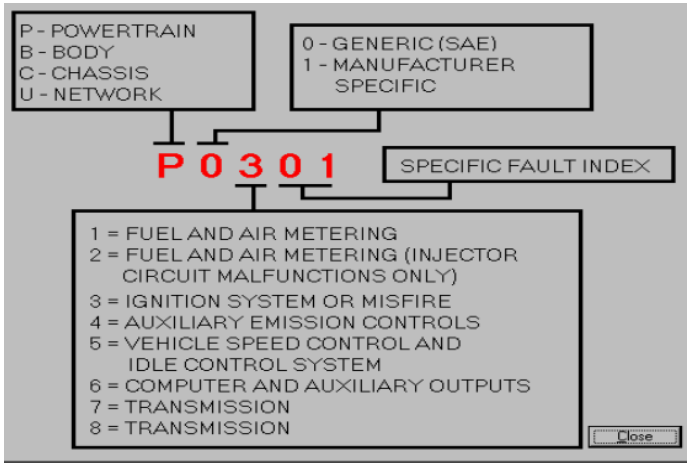
mechanics quickly pinpoint issues and performing necessary repairs saves time and money (Fontaine, 2023).

**Types of Automotive Diagnostic Tools**

| | | |
|---|---|---|
| OBD-1 (Onboard Diagnostics) Scanners | OBD-2 Scanners | PC-based scanners |
| Handheld scanners | Bluetooth scanners | |

**Diagnostic Trouble Codes (DTCs)**

- Trouble codes are how OBDII identifies and communicates to technicians where and what on-board problems exist.




The first letter tells us which of the four main parts is at fault.

| Letter | Description |
|---|---|
| **P** | **(Powertrain)-** refers to the engine, transmission, fuel system, and associated accessories. |
| **B** | **(Body)**-refers to parts mainly found in the passenger compartment area. |
| **C** | **Chassis-** refers to mechanical systems outside the passenger compartment, such as steering, suspension, and braking**.** |
| **U** | **Network-** refers to the vehicle's onboard computers and related systems. |

The second character is a digit, typically 0 or 1, and shows whether the code is standardized.

- A zero denotes a generic code. 0 indicates that the code is a generic, standardized SAE (Society of Automotive Engineers). Generic codes are adopted by all cars that follow the OBD-II standard.
- 1 indicates that the code is vehicle manufacturer-specific. These codes are unique to a specific car make or model and are typically less common.
- 2 or 3 are rarer, and their meanings depend on the preceding letter of the code. Usually, 2 or 3 indicates that a code is manufacturer-specific, with only a few exceptions.

The third character is also a digit, ranging from 1 to 8. This reveals the subsystem at fault.

| Numbers | Description |
|---|---|
| **1** | refers to the fuel or air metering system |
| **2** | Fuel and Air Metering (injector circuit malfunction specific) |
| **3** | Ignition System or Misfire |
| **4** | Auxiliary Emissions Controls |
| **5** | Vehicle Speed Control And Idle Control System |
| **6** | Computer Auxiliary Outputs |
| **7** | Various transmission and Gearbox faults |
| **8** | |
| **9** | |
| **A, B, C** | Hybrid Propulsion Faults |

- The last two characters tell us the specific fault that helps pinpoint exactly where the problem is and which part needs attention.

**2. Worked Example**.
Let the students answer the following questions.

1. If you become an automotive technician, which diagnostic technique will you use? Sensory skills or using a diagnostic scanner? Elaborate your answer.
2. How do diagnostic scanners affect the work of automotive technicians?
3. What would happen to an old automotive technician who did not embrace technology in diagnosing and troubleshooting?

**3. Lesson Activity: Reading Trouble Codes**
**Objective**

- Read and interpret the Diagnostic Trouble Codes (DTCs)

**Answer Key**

- P0575 – it is a generic OBD-II powertrain fault. The specific fault relates to the vehicle speed control or idle control system.
- P0500 – A malfunction in the vehicle's speed sensor

**Material**
Printed Handouts
**Instructions:**

- Divide the class into small groups.
- Distribute printed handouts containing sample diagnostic trouble codes (DTCs) to each student.
- Explain to students that they will practice reading and interpreting these DTCs using the knowledge gained from the lesson.
- Instruct students to analyze each DTC and determine the possible issue indicated.
- Ask students to share their interpretations of the DTCs and the possible issues they identified.
- Compare students' responses with the answer key and provide feedback and clarification.
- Encourage students to ask questions and engage in further discussion about the diagnostic trouble codes and their implications.
- Conclude the activity by summarizing key points and emphasizing the importance of understanding diagnostic trouble codes in automotive diagnostics.

**SUB-TOPIC 3: Testing the Components**

**1. Explicitation**

- Ask the students to give testing tools they observe commonly used by a technician.
- How do these tools help the technician troubleshoot?
- Give 1 tool you have experience using in troubleshooting something. What is your experience in using it? Did these tools help you troubleshoot and repair something? Please discuss further.

Another technique used in diagnosing and troubleshooting is testing the actual components using testing tools. After reading the user manual, you may use the testing tool to determine whether the vehicle's problem follows the specifications in the manual.

| **Common Testing Tool** | | |
|---|---|---|
| Multimeter | Battery Tester | Smoke Machine |
| Engine Compression Tester | Fuel Pressure Tester | Vacuum Gauge |
| Brake Fluid Tester | Tire Pressure Gauge | Timing Light |
| Sparkplug Tester | | |

- B1927: Faulty passenger side airbag
- B1203: Fuel sender circuit short to battery
- P0650 - Powertrain, generic, computer, and output circuit; check engine light control circuit malfunction.

**Possible Answers**

1. A multimeter can check the electrical system, including the battery voltage and ignition components. A fuel pressure tester can also check for proper fuel pressure, while a compression tester can assess the engine's compression.
2. A multimeter can be used to check the voltage output of the vehicle's alternator and battery. A circuit tester can also help identify loose or damaged electrical connections causing intermittent flickering.

| | | |
|---|---|---|
| | **2. Worked Example**<br>● Let the students think of a testing tool that they observe used by automotive and small engine technicians.<br>● Encourage students to ask questions and engage in discussions about the diagnostic process.<br>● Let them share it with the class.<br><br>**Guide questions!**<br>1. What tool is used when a technician wants to check tire pressure?<br>2. Which tool is employed to examine defective wiring, such as malfunctioning headlights?<br><br>**3. Lesson Activity: Diagnosing and Troubleshooting Challenge in Automotive Servicing**<br>**Objective:** Demonstrate basic knowledge in diagnosing and troubleshooting vehicles.<br><br>**Instruction**<br>● Divide students into small groups and assign each group a hypothetical automotive issue.<br>● Instruct students to work together to diagnose the problem using their theoretical knowledge.<br>● Encourage groups to discuss possible causes and solutions based on the symptoms provided.<br>● Let them present their output in class.<br>● Provide rubrics for the presentation.<br><br>**Situations:**<br>1. The vehicle's engine is cranking but not starting.<br>2. The vehicle's dashboard lights are flickering intermittently.<br>3. The vehicle's brake pedal feels spongy when pressed.<br>4. The vehicle's tire pressure warning light is illuminated.<br>5. The vehicle's exhaust emits black smoke.<br><br>**DAY 3**<br>**SUB-TOPIC 4: Service Cost**<br><br>**1. Explicitation**<br>● Ask the students what they will do if one other gadget malfunctions or needs repair. | 3. A brake fluid tester can check the condition and moisture content of the brake fluid. A brake pressure tester can also help diagnose issues with the brake hydraulic system by measuring brake line pressure.<br>4. A tire pressure gauge can accurately measure the air pressure in each tire.<br>5. A smoke machine can help locate vacuum or exhaust system leaks contributing to black smoke emissions. |

**Guide Questions:**

- If one of your gadgets requires repair, will you do it alone or bring it to the technician?
- What comes to your mind when you need to bring your device for troubleshooting to a service center?
- Did you try to ask yourself how technicians compute their fee for the repair?
- If you own a service center or a repair shop, what would you consider pricing your service?

Service costing involves identifying all expenses for creating, maintaining, and delivering a service. Examples of these cost components include equipment, employee wages, consultancy fees, software, licensing fees, and charges for data center usage (Costing Your Service | University IT, n.d.).

**Replacement Material Costing**

- This term pertains to the expense of substituting an asset or component at its present market worth. It involves the cost of exchanging an existing item with another one possessing similar attributes. This includes calculating the costs of acquiring new materials to replace those depleted, damaged, or otherwise rendered unusable.
- For example, if a piece of machinery in a factory breaks down and needs to be replaced, the material replacement costing would consider the price of a new machine that can perform the same functions, including any additional costs for installation and setup to make the new machine operational.

**Manpower Labor Costing**

- The process of calculating the labor cost for a product or service**.**

**Direct Labor Cost**

- Costs derived directly from employees involved in the production.
- Expenses related to regular working hours and overtime.
- Example. Salary of a welder working on a construction site
- Susan is an assembly line factory worker. She cuts metal sheets and then attaches them to something. This item eventually becomes a finished product. Susan, therefore, forms part of the company's direct labor (Nordqvist, 2018).

**Indirect Labor Cost**

- Cost of labor that is not directly related to the production of goods and the performance of services.

- Tom and Susan work in the same company. Tom is a janitor. He cleans the assembly area where Susan works. He spends most of his day with a bucket and a mop. Tom's Cleaning does not make finished products. We cannot trace his work back to any goods that the company produces (Nordqvist, 2018).

**Fixed Labor Cost**
- Costs that are not expected to change over time.

**Variable Labor Cost**
- Costs increase and decrease with production, such as hourly employees.

Example: Contractors are tasked with addressing issues such as equipment failures and urgent repairs essential for business operations, which occur unpredictably and require case-specific attention.
- Another instance involves individuals employed hourly, particularly during peak seasons like Christmas, when companies recruit temporary workers to meet heightened demand.

**Philippine Construction (Arawan and Pakyawan)**
- **Arawan-** Compensating workers daily or weekly by the agreed hourly labor price.
- **Pakyawan-** An arrangement between the homeowner or service seeker and the worker undertaking the project, establishing a set labor price for the service, regardless of material costs and additional expenses fluctuations.

**2. Worked Example**
- Let the students answer the guide questions.

**Guide Questions**
- What is the common labor cost you observed in your community, such as mason, carpenter, tile setter, plumber, and electrician?
- How much is the labor cost of repairing a motorcycle?
- Imagine you are renovating your bedroom. What materials might you need to replace, and how would you estimate their costs?

**3. Lesson Activity**

**Understanding Service Costing: Replacement Material and Manpower Labor**

**Objective:** After this activity, the students can explain Replacement Material Costing and Manpower Labor Costing.

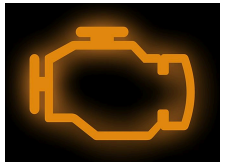
**Tools and Materials Needed:**

| | |
|---|---|
| Board (Whiteboard/chalkboard) | Markers/Chalk |

**Answer key:**
1. Total Cost: P 315.00
2. Total Cost: P 1260.00

| | | |
|---|---|---|
| | <table><tr><td>Projector or visual aids</td><td>Worksheets with examples</td></tr><tr><td>Calculator (optional)</td><td></td></tr></table><br>**Instructions**<br>• Divide students into small groups.<br>• Provide worksheets with scenarios involving Replacement Material Costing and Manpower Labor Costing.<br>• Let them work together, and they need to present their work in class.<br>• Provide a rubric for the presentation.<br><br>**Situations**<br>1. You are a carpenter tasked with building wooden tables for a local café. Due to wear and tear, you must replace the damaged wooden planks used for the tabletops. Each new wooden plank costs P 35.00; you need 9 new planks. Calculate the total cost of replacing the wooden planks.<br>2. You work in a metal fabrication shop and have been assigned to weld metal frames for garden benches. You need to hire 3 welders to work for 6 hours each. The hourly wage for each welder is P 70.00. Calculate the total cost of hiring welders for the metalworking project.<br>3. You own an automotive repair shop, and a customer brings in a car with a damaged bumper. A replacement bumper costs P15,000.00, and you must hire a technician to install it. The technician charges P 150.00 per hour; the installation will take 3 hours.<br>• Calculate the total cost of replacing the bumper.<br>• Calculate the total cost of hiring the technician.<br>• Calculate the combined total cost for both replacement materials and manpower labor. | 3. The total cost of replacing the bumper is P15,000.00.<br>• The total cost of hiring the technician is P450.00.<br>The total cost for replacement materials and manpower labor is P15,450.00. |
| **D. Making Generalizations** | **DAY 4**<br>**1. Learners' Takeaways:**<br>Let the learners answer the following questions.<br>• Compare and contrast diagnostic from troubleshooting.<br>• What diagnostic and troubleshooting techniques are commonly used in Automotive and Small Engine Servicing?<br>• Give one (1) testing tool used in Automotive and Small Engine Servicing and explain its use. | |

| | | |
|---|---|---|
| | • Why is it important to have material replacement costing and labor costing in industrial arts services?<br><br>**2. Reflection on Learning**<br>**Reflection Paper**<br>• Let the students reflect on the importance of immediately diagnosing and troubleshooting a vehicle.<br>• Let them reflect on how immediate diagnosing and troubleshooting of a vehicle helps achieve SDGs 7, 12, and 13.<br>• They may write it on paper or have oral recitation about it.<br>**SDG 7: Affordable and Clean Energy**<br>**SDG 12: Responsible Consumption and Production**<br>**SDG 13: Climate Action** | |

| **IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION** | | **NOTES TO TEACHERS** |
|---|---|---|
| **A. Evaluating Learning** | **DAY 4**<br>**1. Formative Assessment**<br>**Identification:** Let the students identify the following statements, questions, and pictures below.<br>  <br>Image from Roboflow<br>1<br>  <br>Images from Roboflow, Flickr<br>2<br>  <br>Image from PublicDomainVectors.org<br>3<br>4. Black or dark brown under the vehicle indicates what leak?<br>5. Green or blue under the vehicle indicates what leak?<br>6. What does the letter P mean in Diagnostic Trouble Codes (DTCs)?<br>7. What does the letter U mean in Diagnostic Trouble Codes (DTCs)?<br>8. Labor costs are derived directly from employees involved in the production.<br>9. Labor costs that are not expected to change over a period. | **Answer Key:**<br>1. Engine Check Light Symbol<br>2. Temperature Warning Light<br>3. Tire Pressure Gauge<br>4. Engine oil leak<br>5. Coolant leak<br>6. Powertrain<br>7. Network<br>8. Direct Labor Cost<br>9. Fixed Labor Cost<br>10. Replacement Material Costing<br><br>**Note:** You may give another task for formative tests if they align with the objectives. |

<table>
<tr><td></td><td colspan="3">10. The term pertains to the expense of substituting an asset or component at its present market worth.<br><br>2. Homework<br>● Let the students ask their parents or people who know about the labor cost for construction workers, such as masons, electricians, carpenters, tile setters, plumbers, and automotive and motorcycle technicians.<br>● Let's also ask an automotive technician, motorcycle technician, or even a driver how they diagnose or troubleshoot a problem with their vehicle.<br>● Then, let the student make a summary report of their interview.</td><td></td></tr>
<tr><td rowspan="5">B. Teacher's Remarks</td><td>Note observations on any of the following areas:</td><td>Effective Practices</td><td>Problems Encountered</td><td rowspan="5">The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement and other related stuff.<br><br>Teachers may also suggest ways to improve the different activities explored/ lesson exemplar.</td></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>others</td><td></td><td></td></tr>
<tr><td>C. Teacher's Reflection</td><td colspan="3">Reflection guide or prompt can be on:<br>▪ <u>principles behind the teaching</u><br>What principles and beliefs informed my lesson?<br>Why did I teach the lesson the way I did?<br>▪ <u>students</u><br>What roles did my students play in my lesson?<br>What did my students learn? How did they learn?<br>▪ <u>ways forward</u><br>What could I have done differently?<br>What can I explore in the next lesson?</td><td>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.</td></tr>
</table>