

# Precision Procedures: Writing the Mechanic's Checklist

## Materials Needed

- Access to a simple mechanical object (e.g., bicycle, lawnmower, car engine bay, or a detailed model kit) OR high-quality technical diagrams/manual excerpts.
- Paper or digital document editor (for writing procedures).
- Writing utensils.
- Sample technical manuals or user guides (digital or physical).
- List of common technical action verbs (e.g., \*torque, inspect, gauge, cycle, verify, disconnect\*).
- A timer (for focused writing segments).

## Learning Objectives (Student-Friendly)

By the end of this lesson, you will be able to:

1. **Identify** the three essential parts of effective procedural writing (Goal, Steps, Caution/Warning).
2. **Define** and correctly use at least five new technical vocabulary terms related to vehicle maintenance.
3. **Write** a clear, sequential, and comprehensive procedural guide for a basic mechanical task, ensuring every step is unambiguous.

## Success Criteria

You know you have succeeded when your procedural guide:

- Uses only command verbs at the beginning of each step (e.g., "Check," not "You should check").
- Sequences the steps logically so someone unfamiliar with the task can complete it successfully.
- Includes precise technical vocabulary where appropriate (e.g., using "viscosity" instead of "thickness").
- Clearly identifies required tools and safety precautions/warnings.

## I. Introduction: The High Cost of Fuzzy Instructions (15 Minutes)

### The Hook: The \$50,000 Miscommunication

**Educator Prompt:** Imagine you are a lead mechanic. A junior tech misunderstood one line in your repair guide and installed a critical engine part backward, causing catastrophic failure. That mistake cost the shop \$50,000 in parts and labor. Why did that happen? Because the instructions were poorly written. In the world of mechanics, clear, precise writing is just as important as knowing how to turn a wrench—it saves lives and money.

### Discussion & Relevance

- Q: What mechanical task requires the most precision in its steps? (E.g., timing an engine, torquing a lug nut).

- Q: How is writing a clear instruction manual similar to correctly diagnosing an engine problem? (Both require observation, sequencing, and precision).

## Objective Review

Today, we are moving from being good mechanics with our hands to being great mechanics with our words. We will learn how to write procedures that leave zero room for error.

# II. Body: Mastering the Technical Manual (45 Minutes)

## A. I Do: Technical Vocabulary and Structure Modeling (15 Minutes)

### Content Focus: Procedural Writing Structure & Command Verbs

The goal of procedural writing is simple: Tell the reader exactly what to do, how to do it, and what to watch out for.

#### The Core Structure:

1. **Title/Goal:** (e.g., "Procedure for Verifying Engine Oil Level")
2. **Tools Required:** (List all needed items)
3. **Sequential Steps:** (Use numbers, starting with command verbs)
4. **Warnings/Cautions:** (Safety and damage prevention)

#### Modeling Example (Educator demonstrates):

Let's write Step 1 for checking the engine oil.

- *Poor phrasing:* "You should probably let the car warm up before you check the oil."
- *Precise Technical Phrasing (Modeling Success Criteria):* "Cycle engine to operating temperature, then deactivate and wait 5 minutes to allow oil viscosity to stabilize." (Highlighting command verbs and technical vocabulary like \*Cycle\* and \*Viscosity\*).

## B. We Do: Vocabulary Scavenger Hunt and Deconstruction (15 Minutes)

### Activity: Analyzing a Manual

1. Provide the learner with a short excerpt from a real mechanical manual (or a printed technical diagram/set of instructions).
2. **Task:** The learner will highlight all the specialized or technical words they see (e.g., \*caliper, tolerance, maximum PSI, lug nut torque\*).
3. **Vocabulary Development:** Create a shared "Technical Lexicon" list. The learner must define the terms based on context or quick research. (Aim for 5-7 new terms).
4. **Clarity Check:** Together, identify one section of the manual that is confusing or poorly written. Rewrite that section using clear command verbs and better sequencing.

**Formative Assessment:** Quick check to ensure the learner can correctly define 3 of the new technical terms from the Lexicon.

## C. You Do: The Mechanic's Procedural Guide Project (15 Minutes)

### Activity: Application and Creation

Learners choose one basic mechanical task they can access and observe (e.g., checking tire pressure, topping off windshield washer fluid, or replacing a bicycle inner tube).

**Task:** Write a complete procedural guide for this task, adhering strictly to the Success Criteria.

#### **Scaffolding/Choice:**

- **Option 1 (High Scaffold):** Write the procedure for "How to Check Fluid Levels." (Simpler, fewer steps).
- **Option 2 (Standard):** Write the procedure for "How to Calibrate Tire Pressure and Inspect Tread Depth." (Requires measuring and technical terms like \*tread depth\* and \*PSI\*).
- **Option 3 (Extension):** Write a diagnostic procedure: "How to Identify the Source of a Squealing Brake Noise." (Requires IF/THEN logic and decision trees, advancing technical writing complexity).

### **III. Conclusion: Peer Review and Final Takeaways (15 Minutes)**

#### **A. Peer Review (Role-Play)**

The learner will assume the role of the Lead Engineer. The educator will play the role of the Junior Technician.

1. The learner reads their procedural guide aloud, giving instructions to the "Junior Technician."
2. The "Junior Technician" intentionally follows the instructions *literally*. If the instruction is vague (e.g., "tighten the nut"), the technician asks, "Tighten to what specific torque?" If a step is missing (e.g., "disconnect the battery"), the technician tries to perform the next step unsafely.
3. This immediate feedback loop forces the learner to identify where their written instructions failed due to ambiguity or lack of technical detail.

#### **B. Lesson Recap and Reflection**

- Educator Q: Why is a sequence critical? What happens if you skip a step in a brake job?
- Learner Reflection: How did using specific command verbs (like \*gauge\* vs. \*look at\*) change the quality of your writing?

#### **C. Summative Assessment: Success Criteria Evaluation**

Use the Success Criteria checklist to evaluate the learner's final Procedural Guide (from Section II.C). Provide specific feedback focusing on precision and vocabulary usage.

**Example Feedback Focus:** "Your sequence was perfect, but Step 4 needs a more precise verb. Instead of 'put back on,' you should use 'Reinstall and **torque** the housing bolts to manufacturer specification.'"

#### **Differentiation and Extension**

##### **Scaffolding (Support)**

Provide a physical template with blanks for the Goal, Tools, and Warning sections, requiring only the sequential steps to be filled in.

##### **Extension (Challenge)**

Develop the procedural guide into a professional "Tech Tip" infographic or presentation, adding visuals (sketches or sourced images) and formatting the text for maximum readability and efficiency (focus on layout and typography).

**Scaffolding (Support)**

Allow the learner to use a dictionary or glossary throughout the entire writing process to reinforce correct technical terminology.

**Extension (Challenge)**

Write a short comparative essay (250 words) analyzing the differences between procedural writing (step-by-step) and descriptive writing (what a part looks like) and explaining why both are necessary in a repair manual.