Strengthened Senior High School

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplars for Computer Systems Servicing

TECH-PRO ELECTIVE



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Table of Contents

LESSON EXEMPLAR 1: Computer Disassembly and Assembly Procedure 1

LESSON EXEMPLAR 2: Preparing Application and System Software 11

LESSON EXEMPLAR 3: Installation of Operating System and Application Software 20

LESSON EXEMPLAR 4:
Installation of Operating System and Application Software Disc Management and Partitioning 35

LESSON EXEMPLAR 5: Computer Testing and Documentation 48

LESSON EXEMPLAR			
Learning Area	COMPUTER SYSTEMS SERVICING	**Lesson Exemplar**	1

I. OBJECTIVES	
A. Content Standard	The learners demonstrate an understanding of concepts and principles in setting up computer systems.
B. Performance Standard	The learners perform setting up computer systems, adhering to occupational health and safety standards.
C. Learning Competencies	LC3 - Perform disassembly and assembly of computer hardware
II. REFERENCES and MATERIALS	**References:** • Department of Education. "STRENGTHENED SENIOR HIGH SCHO OL CURRICULUM COMPUTER SYSTEMS SERVICING Grade 11/12." Course description. *DepEd Complex, Meralco Avenue, Pasig City*, 2021. https://www.deped.gov.ph/wp-content/uploads/Computer-Systems-Servicing.pdf. • UMATechnology, "Computer Hardware Assembly and Disassembly," UMA Technology. Accessed March 30, 2026. https://umatechnology.org/computer-hardware-assembly-and-disassembly. • "Lesson 1: Computer Disassembly and Reassembly | Microsoft Corporation - a+ Certification Training Kit," n.d., Accessed March 30, 2026. https://flylib.com/books/en/2.893.1.87/1/ • HowStuffWorks. "How Computer Hardware Works." Accessed March 30, 2026. https://computer.howstuffworks.com. • PCWorld Staff. "How to Assemble a Desktop PC." *PCWorld*. Accessed March 30, 2026. https://www.pcworld.com. • MathTech GRS Handouts. "Computer Disassembly - TESDA CSS NCII," February 2, 2025. https://www.youtube.com/watch?v=FgJQ_KC7DEI. • MathTech GRS Handouts. "Computer Assembly - TESDA CSS NCII," February 2, 2025. https://www.youtube.com/watch?v=UeaQ7Ou5H-Q. • Microsoft Store - Download Apps, Games & More for Your Windows PC. "COMPSIMU - Free Download and Install on Windows | Microsoft Store." Accessed April 1, 2026. https://apps.microsoft.com/detail/9ns4tq5n0hww?hl=en-US&gl=PH.

	Materials: • Computers/laptops with COMPSIMU installed smart television • Phillips-head screwdriver, flat-head screwdriver (if needed), anti-static wrist strap, small container for screws, labeling tape (optional), activity worksheet	
III. CONTENT	Computer Disassembly and Assembly Procedure	
IV. OBJECTIVES	At the end of the lesson, Grade 11/12 learners are expected to: 1. Identify the different components of a computer system 2. Demonstrate responsibility in following standard procedures during disassembly and assembly tasks. 3. Perform complete disassembly and assembly of computer hardware with speed and accuracy.	
V. PROCEDURES		**ANNOTATIONS**
A. Activating Prior Knowledge	**1. Activating Prior Knowledge** **"What's Inside a Computer?"** • The teacher will ask learners to think individually: *"What parts do you think are inside a computer system unit?"* • Instruct them to pair up and discuss answers. • Let the learners share responses with the class. **Guide Questions:** 1. *What are the parts found inside a system unit?* 2. *What is the function of each part?* 3. *Which part do you think is the most important? Why?* 4. *What might happen if one part is missing or damaged?* 5. *How do these parts work together as a system?*	*The teacher may ask the learners to list at least 3–5 components and, if possible, their functions.* *Prompt deeper thinking by asking follow-up questions.*

	2. Establishing the Purpose of the Lesson **Activity 3.1: "Skill Check: Future Ready"** • The teacher will show images or short descriptions of jobs such as: ▪ Computer Technician ▪ IT Support Specialist ▪ Network Installer • Ask learners to match the job roles with tasks (e.g., assembling PCs, fixing hardware issues). • Facilitate a discussion on how hardware assembly skills are used in these careers. **Guide Questions:** 💻 *What jobs require knowledge of computer hardware?* 💻 *How can this competency help you earn or start a small business?* 💻 *Why is this skill valuable in today's digital world?*	*The teacher will prepare images of jobs presented.* *Connect the lesson to future careers and employability.* *Learners understand that the lesson contributes to career readiness and possible income-generating opportunities* ***For Struggling Learners:*** • *Provide a word bank with job roles next to tasks.* • *Use simplified language in task descriptions.* • *Allow matching with visuals only (pictures of tasks or jobs).* ***For Advanced Learners:*** • *Add 2–3 extra ICT jobs (e.g., Cybersecurity Analyst, Cloud Engineer) with tasks.* • *Ask them to explain the differences between similar job roles.*
B. Instituting New Knowledge	**1. Presenting Examples "Why Should I Care?"** • The teacher will present short scenario to the learners *"A small internet café in your barangay suddenly shuts down because several computers are not working. The owner cannot afford a technician."*	*Read the scenario aloud or let learners read silently.* *Clarify unfamiliar terms if needed (e.g., "technician").* ***For Struggling Learners:*** • *Provide simplified explanations or examples.* ***For Advanced Learners:*** • *Challenge them to suggest specific solutions or steps.*

	• Ask learners individually to reflect and answer: *What could be the possible problems with the computers?* *Who can help fix these issues?* *What skills are needed to solve the problem?* • Let the learners share their answers. Other possible scenarios: *Your younger sibling cannot attend online classes because the computer suddenly won't turn on. Your parents are busy and there is no technician available nearby.* Guide Questions: *What could be the possible hardware issues?* *How can your knowledge of computer assembly help solve the problem?* *Why is this skill important in supporting your family?* **2. Discussing New Concept** **Lesson 1: Practice Occupational Health and Safety Procedures** Importance of OHS in Computer Hardware Work • Prevents electric shock and fire hazards • Protects components from electrostatic discharge (ESD) • Avoids physical injuries such as cuts, strains, or eye injuries • Ensures compliance with school, workplace, or industry safety standards	*Guide the learners to realize that computer hardware skills are practical, in-demand, and useful for troubleshooting and livelihood.* *Synthesize the learners' responses and highlight key ideas such as:* • *Importance of basic troubleshooting skills* • *Usefulness in daily life, school, and community* • *Potential for jobs or small business* *Use slide deck in discussing the lesson. Use step-by-step illustrations to help learners follow the instructions clearly.*

	Preparation Before Assembling or Disassembling • Work Area Safety • Personal Protective Equipment (PPE) • Tools and Equipment Check OHS Procedures During Disassembly • Power Safety • Static Electricity Control • Component Handling • Proper Storage OHS Procedures During Assembly • Component Inspection • Safe Installation • Cable Management • Electrical Safety **"Safety Hazard Spotting"** • Teachers will show pictures or illustrations of a computer assembly area with multiple safety violations (e.g., unplugged wrist strap, liquid near PC, tangled wires, improper posture). • Instruct the learners to write down at least 5 hazards and explain why each is unsafe. **Lesson 2: Computer Disassembly Procedures** • **Safety Precautions (Before You Start)** a) Power off the computer completely b) Unplug all cables c) Discharge residual electricity d) Use anti-static protection e) Work on a clean, flat surface	*Present the images of a computer assembly workspace with varied safety hazards.* *Allow the learners for a few minutes to observe silently, then instruct them to identify at least five unsafe practices and explain why each is hazardous.* *Facilitate a short discussion by asking learners to share their answers and justify their responses.* *Clarify misconceptions and highlight correct safety practices.* *Conclude by emphasizing the importance of maintaining a safe and organized working environment during computer assembly and disassembly.*

	• **Computer Disassembly Procedures** Step 1: Remove the System Unit Cover Step 2: Identify Internal Components Step 3: Disconnect Power and Data Cables Step 4: Remove Expansion Cards Step 5: Remove Storage Devices Step 6: Remove RAM Modules Step 7: Remove the Power Supply Unit (PSU) Step 8: Remove CPU Cooler and Processor Step 9: Remove the Motherboard **Lesson 3: Computer Assembly Procedures** • **Safety Precautions (Before Assembly** a) Ensure all components are powered off b) Work on a clean, dry, and well-lit surface c) Wear an anti-static wrist strap or ground yourself regularly d) Handle components by the edges only e) Keep liquids and food away from the workspace f) Organize screws and parts to avoid loss • **Computer Assembly Procedures** Step 1: Install the Power Supply Unit (PSU) Step 2: Install the Motherboard Step 3: Install the CPU Step 4: Apply Thermal Paste and Install CPU Cooler Step 5: Install RAM Modules Step 6: Install Storage Devices (HDD / SSD) Step 7: Install Expansion Cards Step 8: Connect Power and Data Cables Step 9: Cable Management Step 10: Final Inspection Step 11: Close the System Unit	***For struggling learners:*** • *Provide clues or allow peer support before answering.* ***For visual learners:*** • *Use labeled diagrams or enlarged images.* ***For fast learners:*** • *Ask them to explain safety precautions or demonstrate tool use.* Show video on how to disassemble and assemble computer. *Disassemble:* *https://www.youtube.com/watch?v=FgJQ_KC7DEI* *Assemble:* *https://youtu.be/UeaQ7Ou5H-Q?t=8*

	3. Developing Mastery **Activity 3.2: "Build It Right with COMPSIMU"** • Guide the learners in navigating COMPSIMU and emphasize the importance of following the correct sequence and safety procedures. • Monitor learners as they perform the simulation, provide assistance when needed. • Encourage active participation of the learners by asking guiding questions. *1) Why is it important to follow proper procedures in assembling and disassembling a computer?* *2) Which component did you remove first? Why is it important to follow this sequence?* *3) Did you encounter any difficulty while disassembling? What did you do to solve it?* *4) What safety practices did you observe while using COMPSIMU?* *5) Which part of the activity did you find most challenging? Why?* *6) How can this simulation help you in real-life computer servicing tasks?* • Reinforce proper techniques and correct misconceptions during the activity and conclude with a short reflection to connect the simulation experience to real-world computer servicing tasks.	*Download and install the COMPSIMU application:* (https://apps.microsoft.com/detail/9ns4tq5n0hww?hl=en-US&gl=PH) *Briefly introduces COMPSIMU and its purpose.* *Review safety precautions and proper handling of computer components.* *Guide the learners in disassembling and assembling of computer using the COMPSIMU application.* *Use rubrics to assess the learners' performance*

C. Demonstrating Knowledge and Skills	**1. Finding Practical Application** **Activity 3.3: "PC Puzzle Challenge"** • Guide the learners to carefully disassemble a computer step by step, labeling each component as they go. • Emphasize proper handling, use of tools, and adherence to OHS standards. • After disassembly, have them reassemble the system correctly, monitoring safety, accuracy, and teamwork. **2. Making Generalization** **"*Build the Big Idea!*"** • Ask them to organize the following in a visual or written form: – *Different computer components* – *Functions of each component* – *Proper procedures in disassembly and assembly* – *Safety practices to observe* • Learners may present their work through: – *Concept map* – *Flowchart* – *3–5 sentence summary* • After completing the task, selected learners will share their outputs with the class.	*Let the learners demonstrate hands-on skills in disassembling and assembling computer components safely and correctly.* *Divide learners into small groups (2–3 per group).* *Each group disassembles their assigned computer system step by step.* *Move around the room to monitor safety, provide guidance, and answer questions.* *Learners will work individually or in pairs to create a concept map or summary statement that shows their understanding of the lesson.* *Provide learners with manila paper/cartolina or worksheets.* *After the learners present their output, the teacher will ask:* *a) "What common ideas did you notice in your outputs?"* *b) "Can we form one general statement about today's lesson?"*

	3. Evaluating Learning **Activity 3.4: "Troubleshoot & Rebuild Race"** • Divide the class into small groups and distribute the pre-prepared computer units with intentional faults. • Instruct learners to inspect, diagnose, troubleshoot, and reassemble the system within the allotted time. • Assign roles per group (e.g., leader, technician, recorder, checker) • While the activity is ongoing, the teacher facilitates monitoring group performance, asking guide questions, and ensuring proper handling of components, while minimizing direct intervention. Sample guide questions: – *What do you think is causing the issue?* – *Which component should be checked first?* – *Are all connections secured properly?* • After the activity, the teacher checks each group's output based on correctness and functionality, then leads a short debriefing discussion to process learners' experiences, challenges, and strategies used. Sample reflective questions: – *What challenges did your group encounter?* – *How did you identify the problem?* – *What strategies helped you finish faster?* – *Why is proper assembly important in troubleshooting?* • Evaluate learners based on: – *Accuracy of troubleshooting and assembly* – *Time efficiency* – *Teamwork and participation* – *Observance of safety procedures*	*The teacher begins by introducing the activity as a real-life simulation where learners act as computer technicians tasked to repair a faulty system.* *Clearly explain the objective, mechanics, time limit, and expected outputs.* *Emphasize the importance of accuracy, teamwork, and safety procedures before starting.* *Encourage equal participation* *Set clear expectations to avoid rushing and careless handling* *Reinforces key concepts in troubleshooting, proper assembly, and the value of teamwork and safety in real-world computer servicing.* *Assign different faults per group for variety* *Adjust difficulty based on learner level* ***For Beginning Learners*** • *Focus on identifying at least 2 major faults only* ***For Average Learners*** • *Focus on identifying at least 3 major faults only* ***For Advanced Learners*** • *Focus on identifying at least 5 major faults only* • *Explain the function of each faulty component*

	Activity 3.5: "Multiple Choice Quiz" • Instruct the learners to answer the given quiz.	• *Suggest ways to prevent the problem in the future* *Distribute the test questionnaire to the learners.*
VI. ASSESSMENT		
VII. REFLECTION	• Principles behind teaching *What principles and beliefs informed my lesson?* _____ *Why did I teach the lesson the way I did?* _____ • Learners *What roles did my learners play in my lesson?* _____ *What did my learners learn? How did they learn?* _____ • Ways forward *What could I have done differently?* _____ *What can I explore in the next lesson?* _____	
VIII. USE OF GENERATIVE AI	In preparing this Learning Exemplar (LE), the author used Copilot and ChatGPT in order to organize the content, activities and provide example scenarios. The author reviewed and finalized the writing of the content. The author takes full responsibility for the content of this LE.	

LESSON EXEMPLAR			
Learning Area	COMPUTER SYSTEMS SERVICING	**Lesson Exemplar**	2

I. OBJECTIVES	
A. Content Standard	The learners demonstrate an understanding of concepts and principles in setting up computer systems.
B. Performance Standard	The learners perform setting up computer systems, adhering to occupational health and safety standards.
C. Learning Competencies	LC4 - Create portable bootable device
II. REFERENCES and MATERIALS	**References:** ● Department of Education. "STRENGTHENED SENIOR HIGH SCHOOL CURRICULUM COMPUTER SYSTEMS SERVICING Grade 11/12." Course description. DepEd Complex, Meralco Avenue, Pasig City, 2021. *https://www.deped.gov.ph/wp-content/uploads/Computer-Systems-Servicing.pdf* ● Microsoft. "Create Installation Media for Windows." Accessed April 1, 2026. *https://www.microsoft.com/software-download/windows10* ● Rufus. "Rufus – Create Bootable USB Drives the Easy Way." Accessed April 1, 2026. *https://rufus.ie* ● Balena. "balenaEtcher: Flash OS Images to SD Cards & USB Drives." Accessed April 1, 2026. *https://www.balena.io/etcher* ● Ubuntu Documentation Team. "Create a Bootable USB Stick on Windows." Accessed April 1, 2026. *https://ubuntu.com/tutorials/create-a-usb-stick-on-windows* ● Intel Corporation. "BIOS and UEFI Boot Process Explained." Accessed April 1, 2026. *https://www.intel.com* ● TechTarget. "What Is a Bootable USB Drive?" Accessed April 1, 2026. *https://www.techtarget.com* **Materials:** ● USB, desktop computers/laptops with third party application installed, smart television ● Sample ISO file, slide deck presentation, activity worksheet, workflow diagram, performance checklist,

III. CONTENT	Preparing Application and System Software ● Create ISO image file Creating Bootable Device ● Use third party application Use DOS command	
IV. OBJECTIVES	At the end of the lesson, Grade 11/12 learners are expected to: 1. Explain the purpose and importance of portable bootable devices in system installation, recovery, and troubleshooting. 2. Create an ISO image using a third-party application or DOS commands 3. Exhibit patience and problem-solving attitude when troubleshooting bootable	
V. PROCEDURES		**ANNOTATIONS**
A. Activating Prior Knowledge	**1. Activating Prior Knowledge** **"Tech Recall Talk"** • The teacher will ask learners questions: 💻 *Have you ever installed Windows or seen someone install an operating system?* 💻 *What happens if a computer cannot start properly?* 💻 *Have you used a USB flash drive? What do you usually store in it?* 💻 *What do you think the word boot means on a computer?* • Let the learners share experiences orally. • Teacher summarizes connections between their answers and system startup processes.	*Begin the lesson in a conversational tone to reduce learner anxiety, especially since technical topics can feel intimidating.* *Use probing questions and relatable scenarios.* *Encourage participation from all learners; validate responses even if incomplete.* *Write key ideas on the board (e.g., USB, boot, BIOS, OS installation).* ***For Struggling Learners:*** Ask simple yes/no questions: • *Is this a storage device?* • *Have you seen this screen before?* ***For Advanced Learners:*** Ask higher-order questions: • *Why do technicians prefer USB bootable devices over CDs?* • *What do you think happens if the boot order is incorrect in BIOS?*

	2. Establishing the Purpose of the Lesson **"Why This Skill Matters"** • Teacher Input: *Imagine you are already working as a computer technician. A client brings a laptop that cannot start. There is no operating system. What will you use to fix it?* • Let learners brainstorm answers.	*Guide learners toward the idea of bootable USB devices.* *Clearly state the objectives:* *By the end of this lesson, you will be able to create your own bootable device, an essential skill for technicians.* *Emphasize real-life relevance:* • *Used in IT jobs* • *Saves time and cost* • *Essential in troubleshooting*
B. Instituting New Knowledge	**1. Presenting Examples** **"See It in Action" (Demonstration)** ● The teacher will show actual or visual examples of: 💻 *Bootable USB* 💻 *ISO file* 💻 *A bootable USB created using a third-party software (e.g., Rufus)* ● Explain: 💻 *What makes a USB "bootable"* 💻 *Difference between a normal USB and bootable USB*	*Use actual devices or screenshots.* *Demonstrate slowly and clearly.* *Encourage learners to observe, not yet perform.* ***For Struggling Learners:*** *Provide labeled diagrams.* • *USB* • *ISO file* • *Third party software* ***For Advanced Learners:*** *Compare examples:* • *Bootable USB vs Bootable CD/DVD* • *GUI-based tools vs Command Prompt*

	2. Discussing New Concept **Lesson 4: Creating Portable Bootable Device** **"Let's Build It!" (Guided Demonstration)** Content Focus: ● What is a Portable Bootable Device? ● Purpose: 💻 *OS Installation* 💻 *System Recovery* 💻 *Troubleshooting* ● Creating ISO Image: 💻 *Using third-party tools* 💻 *Using command prompt (DOS)* ● Creating Bootable USB: 💻 *Step-by-step process*	*Use step-by-step demonstration:* • *Insert USB* • *Open bootable software* • *Select ISO file* • *Start process* *Emphasize correct file selection, data will be erased and safety precautions* *Ask checking questions:* • *What happens if you select the wrong drive?* • *Why is formatting important?* ***For Struggling Learners:*** • *Provide step-by-step checklist and visual guide with screenshots* • *Pair them with supportive peers during discussion.* ***For Advanced Learners:*** *Ask to explain:* • *Why an ISO must be properly written* • *Consequences of using incorrect file systems (FAT32 vs NTFS)* *Provide the following materials:* • *USB drives* • *ISO files*

	"Creating an ISO Image" (Guided Practice) ● Guide the learners to follow step-by-step instructions to: 💻 *Open a third-party application or DOS environment.* 💻 *Create an ISO image from a provided installer or folder.* **"Creating an ISO Image" (Independent Practice)** ● Instruct the learners to create a bootable USB using: 💻 *An ISO file* 💻 *A third-party tool* ● Ask them to test the USB on another computer **3. Developing Mastery** **Activity 4.1: "ISO Master: Build Your Bootable Toolkit"** ● Guide learners to apply software preparation skills by creating a functional ISO image and converting it into a bootable USB device for installation or troubleshooting. ● Require learners to: 💻 *Show their bootable USB* 💻 *Test bootability* ● Ask them the processing questions: 💻 *"What challenges did you encounter while creating the ISO or bootable USB?* 💻 *How can this skill be useful in real-world ICT jobs?*	*Assist learners experiencing difficulties.* *Reinforce correct procedures.* *Reinforce values:* • *"Be patient, technical work requires focus and problem-solving."* ***For Struggling Learners:*** • *Provide printed step-by-step instructions with visuals.* ***For Advanced Learners:*** • *Allow use of DOS commands instead of GUI tools.* ***For Struggling Learners:*** • *Work in pairs and receive closer supervision.* ***For Advanced Learners:*** • *Configure advanced settings (partition scheme, file system).* *Begin by briefly explaining the purpose of ISO images and bootable devices in installation and troubleshooting.* *Instruct learners to perform the task: create an ISO image from the given files, then transfer it to a USB drive to make it bootable.* *Emphasize and observe the learners' attitudes while performing the task, such as, patience, carefulness and logical thinking*

		For Struggling Learners: • *Provide visual guides (with screenshots)* • *Use paired work or peer tutoring* • *Give a checklist (tick each completed step)* ***For Advanced Learners:*** • *Create a multi-purpose bootable toolkit (e.g., installer + recovery tools)* • *Troubleshoot a given faulty bootable USB scenario*
C. Demonstrating Knowledge and Skills	**1. Finding Practical Application** **Activity 4.2: "Tech Support Simulation: System Down Scenario"** ● Present the sample scenario: *A small computer shop receives a desktop computer that cannot boot into Windows due to a corrupted operating system. The shop does not have a DVD drive, and the owner requests an urgent repair. Your team is tasked to prepare a portable bootable device to install or repair the system.* ● Group the learners into teams of 4–5 and assigned roles: *a) Team Leader* *b) Documentation Specialist* *c) Technician 1 (ISO Handling)* *d) Technician 2 (Bootable Device Creation)* *e) Troubleshooter (optional for larger groups)* ● Instruct each group to: 💻 *Identify why a portable bootable device is needed* 💻 *Choose an appropriate ISO file (e.g., Windows installer, Linux live OS, or recovery tool)*	*Start by reviewing what a bootable device is* *Guide learners with probing questions:* • *What happens if a computer has no OS?* • *Can we fix this without Internet?* *Move around during group work and observe teamwork and attitudes among learners* *Reinforce workplace values such as: calm execution, logical troubleshooting and collaboration* ***For Struggling Learners:*** • *Provide guided worksheet with step-by-step prompts:* – *What is the problem?* – *What tool will you use?* – *What are the steps?* • *Allow use of flowcharts or diagrams instead of full explanation* • *Pair them with a peer mentor*

	💻 *Create a bootable USB drive using a third-party tool or DOS command* 💻 *Simulate booting and explain what they would troubleshoot if errors occurred* **2. Making Generalization** **"From Boot to Solution"** ***(Concept Mapping + Reflection)*** ● Ask them to create a concept map of the following: 💻 *Bootable device* 💻 *ISO image* 💻 *Third party application* ● Guide questions (Discussion): 💻 *Why are portable bootable devices important?* 💻 *What is the role of ISO files?* 💻 *What skills are needed in creating bootable devices?* 💻 *What challenges did you encounter?* ● For reflection writing: *"How can creating a bootable device help you as a future technician?"*	***For Advanced Learners:*** • *Explain BIOS/UEFI boot order configuration* • *Require deeper explanation of ISO creation using DOS commands* *Model a simple concept map on the board* *Encourage own words, not copied definitions* *Help learners connect practice to theory* *Validate answers and connect ideas* *Highlight real-world relevance (IT jobs)* Highlight key generalizations: • *A portable bootable device is an essential troubleshooting tool* • *ISO files contain system images required for installation or repair* • *Successful troubleshooting requires patience, accuracy, and logic* Encourage reflective thinking: • *What would happen if you skip one step?* • *Why is patience important when errors occur?* ***For Struggling Learners:*** • *Provide partially completed concept map* • *Use word bank (Boot, ISO, USB, Install, Repair)* • *Allow verbal explanation instead of written*

	3. Evaluating Learning **Activity 4.3: "Boot & Deploy Challenge"** ● Instruct the learners to perform the following: 💻 *create an ISO image* 💻 *use either DOS commands or third-party tools to make it bootable,* 💻 *document each step in a workflow diagram* ● Let learners present their bootable device and workflow diagram. ● Ask questions about their process and challenges encountered. ● Sample probing questions: – *Why did you choose that method?* – *What will happen if that step is skipped?* **4. Additional Activities** ● Remediation Activity 💻 *One-on-one or small group coaching* 💻 *Repeat demonstration with simplified instructions* 💻 *Use video tutorials with guided pausing* ● Enrichment Activity 💻 *Research other bootable utilities and create comparison table*	***For Advanced Learners:*** • *Require inclusion of technical terms (boot sequence, partition scheme)* • *Add diagram of boot process* *Ensure all computers are functional* *Remind the learners to:* • *Follow proper procedures* • *Observe safety precautions* *Observe learner progress* *Ask probing questions* ***For Struggling Learners:*** • *Provide guided checklist* • *Allow use of third-party tools* • *Pair them with more capable peers* ***For Advanced Learners:*** • *Require both DOS and tool-based methods* • *Ask for deeper explanation of commands* • *Let them troubleshoot errors independently* *Match activities to learner needs* *Avoid one-size-fits-all tasks* *Encourage mastery before moving forward*

VI. ASSESSMENT	
VII. REFLECTION	● Principles behind teaching *What principles and beliefs informed my lesson?* _____ *Why did I teach the lesson the way I did?* _____ ● Learners *What roles did my learners play in my lesson?* _____ *What did my learners learn? How did they learn?* _____ ● Ways forward *What could I have done differently?* _____ *What can I explore in the next lesson?* _____
VIII. USE OF GENERATIVE AI	In preparing this Learning Exemplar (LE), the author used Copilot and ChatGPT in order to organize content and provide examples of scenarios. The author reviewed and finalized the writing of the content. The author takes full responsibility for the content of this LE.

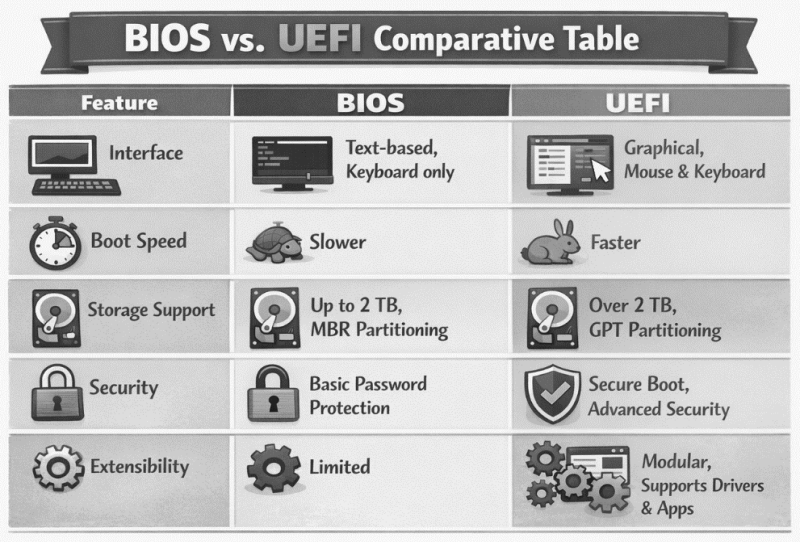
LESSON EXEMPLAR			
Learning Area	COMPUTER SYSTEMS SERVICING	**Lesson Exemplar**	3

I. OBJECTIVES	
A. Content Standard	The learners demonstrate an understanding of concepts and principles in setting up computer systems.
B. Performance Standard	The learners perform setting up computer systems, adhering to occupational health and safety standards.
C. Learning Competencies	Perform installation of system software and application software.
II. REFERENCES and MATERIALS	***References:*** *Curriculum Guide in Computer Systems Servicing https://www.deped.gov.ph/wp-content/uploads/2019/01/Computer-Systems-Servicing-NC-II-CG.pdf* *Buenaagua, Samson. 2016. CBLM in Computer Systems Servicing. Naga College Foundation – Institute for Career Development.* *TESDA Training Regulations 2013 www.tesda.gov.ph/Downloadables/TR%20Computer%20Systems%20Servicing%20NC%20II%20.pdf* ***Materials**: Performance Task Sheets, Situation Analysis Cards, Steps in Creating Bootable Device cards,* ***Tools**: Bootable Device for Installers (Windows Server 2012 or higher versions, Windows 10 or higher versions, Device Drivers, Antivirus, MS Office 2019 or higher versions) minimum of 16 GB.* ***Equipment**: Functional Computer Unit or Laptop Computers, multimedia projector*

III. CONTENT	Installation of Operating System and Application Software • BIOS/UEFI configuration	
IV. OBJECTIVES	In this lesson, learners will be able to: 1. Analyze BIOS and UEFI settings and functions to determine the appropriate steps and system compatibility before installation. 2. Perform the correct procedures of accessing and managing BIOS and UEFI ensuring proper set-up for software and hardware installation. 3. Demonstrate adherence and accuracy in configuring BIOS and UEFI.	
V. PROCEDURES		
A. Activating Prior Knowledge	**DAY 1:** **1. Activating Prior Knowledge** *Previous Topic: Creating bootable device.* **Activity 1: Events Flash Cards Sequencing** a. Teacher will prepare a flashcard that contains the basic steps in creating a bootable device. b. Students will rearrange the flashcards based on what they can recall in creating a bootable device. c. Students will present their output in class. d. Teacher will provide feedback based on student's output.	*To activate prior knowledge, the teacher will use a flashcard sequencing activity about creating a bootable device. Through the constructivist and collaborative learning approach, students will recall and arrange the correct steps while developing critical thinking, teamwork, and active participation.* *During the processing activity, the teacher will use guided questioning and reflective discussion to help learners understand the importance of following the correct sequence in creating a bootable device. Common errors and troubleshooting techniques will also be discussed to strengthen students' procedural understanding and problem-solving skills.*

	Activity 2: Question and Answer / Processing ***Ask:*** *"Why is it important to follow the correct sequence in creating a bootable device? What might happen if one step is done out of order?"* The teacher will mention common errors in creating bootable devices and how they were rectified. **2. Establishing the Purpose of the Lesson** ***Ask:*** *"Have you tried installing application programs in your mobile device and gadgets?"* ***Ask:*** *"Can anyone describe how the installation process happens?"* ***Ask:*** *"What changes happened in your device after completing program or software installation?"* ***Ask:*** *"What possible risks or problems might occur if software is installed incorrectly, and how can proper knowledge prevent these issues?"* Present generalization of learners' feedback and relate them to the "installation of computer programs".	*To establish the purpose of the lesson, the teacher will use an inquiry-based and experiential learning approach by asking guiding questions related to learners' experiences in installing application programs on mobile devices and gadgets. This will help students connect prior knowledge to the new lesson on computer program installation.* *Through discussion and synthesis of learners' responses, the teacher will highlight key ideas and guide learners in understanding the importance of proper installation procedures, including possible risks and how correct knowledge can prevent errors. The teacher will then relate their insights to the concept of installing computer programs.*
B. Instituting New Knowledge	**1. Presenting Examples** Present the following situations to students and allow them to generate ideas related to software installation. ***Activity 3: Situation Analysis*** ***Scenario 1:*** "A student installs a game but skips the system requirements and installs bundled software." ***Scenario 2:*** "A student tries to install new photo editing software on a computer running an older operating	*To present examples, the teacher will use a constructivist and problem-based learning approach through situation analysis related to software installation. Learners will analyze real-life scenarios and identify what happened, what went wrong, and what must be done to correct the issue.*

	system. The installation fails, and an error message appears." ***Scenario 3:*** "A student installs a utility software quickly by choosing 'Next' repeatedly without reviewing optional components, resulting in unnecessary programs being installed." **Students will analyze:** 1. *What happened?* 2. *What went wrong?* 3. *What must be done?* *Teachers will provide necessary feedback on the learner's response.* **2. Discussing New Concept** **Lecture Discussion:** **GENERAL TOPIC: INSTALLATION OF OPERATING SYSTEM AND APPLICATION SOFTWARE** Discuss the general concept and importance of following proper software installation, then discuss the sub-topic on BIOS/UEFI. **LESSON 1: BIOS/UEFI Configuration** ***What is BIOS?*** The BIOS of "Basic Input Output System" is a firmware program stored on a small memory chip on the motherboard. It acts as the first software that runs when a computer is powered on. BIOS initializes and tests the hardware components (like CPU, memory, and storage devices) and prepares the system to load the operating system from a storage device.	*This activity will develop critical thinking and decision-making skills as students connect concepts to practical situations. The teacher will provide feedback to clarify misconceptions and reinforce proper software installation practices and procedures.* *To discuss the new concept, the teacher will employ a guided lecture approach integrated with the I Do, We Do, You Do instructional model to scaffold learners' understanding of BIOS/UEFI configuration as part of operating system and application software installation.* *In the I Do phase, the teacher will clearly explain key concepts such as BIOS and UEFI, including their functions, importance, and real-life applications, while modeling how these firmware systems support hardware initialization and OS loading.*

	What is UEFI? The UEFI is a modern replacement for BIOS that provides a more user-friendly interface and advanced features. Like BIOS, it initializes hardware and boots the operating system, but it also supports graphical interface with mouse support, faster boot times, secure boot to prevent unauthorized software from loading, support for larger storage devices (over 2 TB), better security and system management options. **BIOS and UEFI Comparative Table**  *Figure 1: Image generated by OpenAI, May 7, 2026, DALL-E 3*	*In the We Do phase, learners will participate through guided questioning, analysis of comparative ideas, and scenario-based discussion, where the teacher provides support in interpreting BIOS/UEFI functions and configuration steps.* *In the You Do phase, learners will independently answer activities and analyze scenarios involving BIOS/UEFI configuration and troubleshooting, applying their understanding to practical situations.* *This guided instruction ensures gradual release of responsibility, allowing learners to build confidence in understanding BIOS/UEFI settings, especially in relation to boot configuration and system installation processes.*

	Importance of BIOS/UEFI in Computer Operation 1. Acts as the bridge between hardware and operating systems**.** 2. Allows configuration of essential hardware components like CPU, RAM, storage devices, and peripherals. 3. Provides troubleshooting tools like hardware diagnostics. 4. Enables technicians to optimize system performance through settings like boot order, virtualization, and power management. **Real-Life Relevance** Technicians and ICT professionals need to access and configure BIOS/UEFI for several practical reasons: 1. Install Operating Systems – Adjust boot order to load from USB/CD/DVD. 2. Troubleshooting Hardware Issues – Identify faulty components during POST. 3. Improving Security – Enable Secure Boot and passwords to prevent unauthorized access. 4. System Upgrades – Configure settings for new CPUs, RAM, or storage devices. 5. Enabling Advanced Features – Virtualization for software testing, overclocking, and power management.	

	Example Scenario: A technician preparing a computer for a school lab installation may need to change the boot priority to USB so that a Windows or Linux installer can load, and enable virtualization if students are going to run virtual machines. BIOS/UEFI is essential firmware that prepares the computer hardware and allows the operating system to load properly. Knowing how to configure it is important for tasks like OS installation, troubleshooting, and system optimization. However, BIOS/UEFI settings are not the same across all computers. Different brands and models use different keys, menus, and procedures. Because of this, users must be adaptable and familiar with various configurations to work effectively on different systems **Activity 1: "Tell Me What and How"** **Ask:** Explain two ways BIOS/UEFI acts as a bridge between hardware and the operating system. List two settings in BIOS/UEFI that technicians can configure to optimize computer performance. How does BIOS/UEFI help in troubleshooting hardware problems?	

	Activity 2: Scenario Analysis **Scenario:** A school lab technician is preparing 10 computers for software installation. The installer is on USB, some computers have new RAM installed, and the lab requires virtualization for software testing. 1. Which BIOS/UEFI settings must the technician configure to ensure successful software installation? 2. What security settings should be considered to prevent unauthorized software from running? 3. How would changing the boot order help in this scenario? 4. Explain why technicians need to understand BIOS/UEFI when upgrading hardware or installing software. **STEPS IN CONFIGURING BIOS/UEFI SETTING THE BOOTABLE DEVICE (FLASH DRIVE) AS FIRST BOOT** 1. Insert the Bootable USB Drive Plug the USB flash drive into an available USB port on your computer. 2. Restart the Computer Restart or turn on your computer. 3. Enter BIOS/UEFI Setup As the computer starts, press the BIOS/UEFI access key. Common keys: Del, F2, F10, or Esc (check your motherboard manual or screen prompt).	

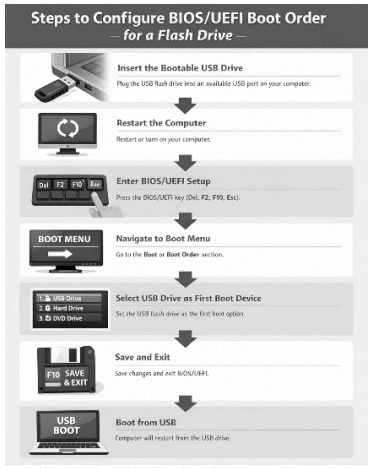


Figure 2: Image generated by OpenAI, May 7, 2026, DALL-E 3

4. Navigate to Boot Menu Use arrow keys (BIOS) or mouse (UEFI) to find the **Boot** or **Boot Order** section.
5. Select USB Drive as First Boot Device
   Locate the list of boot devices.
   Move your USB flash drive to the top of the list.
   In BIOS: usually use + / - keys or instructions on the screen.
   In UEFI: drag and drop or select from a dropdown.
6. Save and Exit
   Save the changes (press F10) and confirm.
   The computer will restart automatically.
7. Boot from USB

	The computer should now boot from the USB flash drive first. Follow installation or recovery prompts as needed. To further deepen learners understanding, learners may access this video tutorial about configuring the BIOS setup: https://www.youtube.com/watch?v=RQELd13uxj8 **3. Developing Mastery** **DOCUMENTING THE "SETTING UP OF BIOS/UEFI"** **Objective:** Apply BIOS/UEFI configuration to set up a fully functional system. **How:** 1. Form groups composed of 3 to 4 members each. Assign a leader to lead the group, a performer to execute the tasks, a documenter to take note of group's reports and accomplishments and an encoder. 2. One member will configure BIOS/UEFI settings on a computer. 3. Other member will be assigned to document the steps in configuring the BIOS / UEFI by taking screenshots / pictures and the hardware specification of the computer. 4. The group will prepare a document (preferably in MS Word or Canva) presenting their output. 5. Prepare a presentation report to be presented in class.	

C. Demonstrating Knowledge and Skills	**1. Finding Practical Application** **PRESENTATION OF THE DOCUMENTED STEPS IN "SETTING UP THE BIOS/UEFI"** After preparing the reports, groups will be asked to present their outputs using the format below: 1. Start with greetings and introduction of group members and roles. 2. Present the main points of outputs. Explain outputs step by step. 3. Use simple and clear language. Show visuals clearly. 4. Summarize the report. Recap the key points of the output. 5. End the presentation and listen to the teacher's feedback. **2. Making Generalization** **"PARK YOUR CARD: OUTLINING THE SEQUENCE OF SETTING UP BIOS /UEFI"** **Procedure:** 1. Assign learners to answer one of the following questions. ***Question 1****: Mentioning the computer hardware specification used, what are the steps in configuring its BIOS / UEFI? Make a shortcut or symbol-filled answer.* ***Question 2*** *: What problems did you encounter while configuring the BIOS /UEFI and how did you troubleshoot the problem?*	*To facilitate finding practical application, the teacher will use a cooperative learning approach through group presentation of documented steps in setting up BIOS/UEFI. Learners will demonstrate communication, collaboration, and understanding by presenting their outputs in a structured manner, ensuring clarity, proper sequencing, and teacher-guided feedback for improvement and validation of learning.* *For making generalizations, the teacher will use the reflective learning approach through the "Park Your Card" activity. Learners will synthesize their understanding of BIOS/UEFI configuration, troubleshooting, and collaboration by responding to guiding questions and posting their insights for class reflection. This encourages critical thinking, peer learning, and knowledge consolidation.*

	Question 3 *: How did working together (or observing others) while configuring the BIOS /UEFI help you manage tasks more efficiently?* 2. Green card for question number 1, yellow card for question number 2 and light blue card for question number 3. The learners may or may not write their names on the card. The learners may also write questions or clarifications. 3. Let learners post their answer in the "PARKING AREA" (a bulletin board intended for collecting learners' feedback **3. Evaluating Learning** **"THE GENERALIZATION AND/OR FEEDBACKING"** The teacher will read the learners responses from the PARK YOUR CARD activity and generate generalization. **4. Additional Activities** **"CREATING VISUAL ACTION PLAN"** Using skills in flowcharting or algorithm making, learners will be tasked to develop a step-by-step procedure or action plan (1) Configuring the BIOS /UEFI, in a piece of paper or through MS word, Canva and other available tool.	*In evaluating learning, the teacher will apply formative assessment and feedbacking, where learners' responses from the activity will be reviewed and synthesized to generate key takeaways. This ensures that misconceptions are clarified and essential concepts about BIOS/UEFI setup are reinforced.*

The teacher will evaluate the outputs based on the following criteria:

Criteria	5 – Excellent	4 – Very Good	3 – Satisfactory	2 – Needs Improvement	1 – Poor
Accuracy of Steps	All steps are correct, complete, and in proper sequence for OS, drivers, and applications installation	2 steps missing or out of sequence	3 steps missing or out of sequence; partially correct	4 to 5 steps missing or incorrect; sequence mostly wrong	6 to 7 steps missing or incorrect; sequence illogical
Clarity & Readability	Visual plan is very clear, well-labeled, easy to follow, with symbols and flowchart conventions correctly used	Mostly clear and readable; minor labeling or symbol issues	Somewhat clear; labeling or flowchart symbols inconsistent	Difficult to follow; poor labeling and symbols	Very unclear; almost impossible to understand
Completeness of Content	Includes all three installations: OS, device drivers, and applications, with detailed steps	Includes most content; minor details missing	Includes only two of the three components or steps are vague	Includes one component or steps are incomplete	Missing most components; lacks meaningful steps
Creativity & Visual Presentation	Highly creative layout; uses colors, symbols, and arrows effectively; visually engaging	Good layout; some creativity in symbols or colors; readable	Average layout; minimal creativity; readable but plain	Poor layout; limited creativity; hard to read	Very messy or confusing; no visual organization
Use of Flowchart / Algorithm Conventions	Proper use of flowchart/algorithm symbols (e.g., process, decision, start/end); follows standard conventions	Mostly correct use of symbols; minor mistakes	Some symbols used incorrectly or inconsistently	Many symbols incorrect; conventions not followed	Symbols not used; conventions ignored

VI. ASSESSMENT

"TOPIC EXIT TEST 1"
(Multiple Choice Test)

Remembering (Knowledge Recall)

1. What does BIOS stand for?
   A. Basic Input/Output System
   B. Binary Input/Output System
   C. Basic Internal Operating System
   D. Binary Internal Operating Software

2. What is the main difference between BIOS and UEFI?
   A. BIOS can boot from drives larger than 2 TB, UEFI cannot
   B. UEFI has a graphical interface and supports larger drives, BIOS does not
   C. BIOS uses mouse navigation, UEFI does not
   D. UEFI is only for laptops

3. Which key is commonly used to enter BIOS/UEFI setup during startup?
   A. F1
   B. Esc
   C. Del or F2
   D. Enter

4. What is the purpose of the “Boot Order” in BIOS/UEFI?
   A. To select which programs run first in Windows
   B. To determine which device the computer boots from first
   C. To increase internet speed
   D. To organize desktop icons

5. What does enabling “Secure Boot” in UEFI do?
   A. Allows installation of any software without restrictions
   B. Prevents unauthorized operating systems from loading
   C. Speeds up the boot process by skipping checks
   D. Increases the CPU speed automatically

6. Which BIOS/UEFI setting affects the CPU and RAM performance?
   A. Boot Order
   B. Overclocking or Performance Settings
   C. Secure Boot
   D. Date and Time

H.O.T.S. / PISA-Type Questions

7. If your computer does not detect your USB bootable drive, what should you check first in BIOS/UEFI?
   A. Boot Order and USB Configuration
   B. Secure Boot and Fast Boot
   C. Date and Time
   D. CPU and RAM settings

8. Your school requires you to install an operating system on multiple computers. Which BIOS/UEFI configuration will make the installation process easier?
   A. Set the bootable USB as the first device in Boot Order
   B. Enable Secure Boot and disable USB boot
   C. Change CPU settings to maximum
   D. Disable the hard drive

	9. A student accidentally changes the BIOS settings and the computer no longer boots. What is the best solution? A. Press F1 repeatedly until Windows starts B. Reset BIOS/UEFI to default settings C. Replace the motherboard D. Remove the hard drive 10. You want your system to boot faster, but still allow USB boot when needed. Which BIOS/UEFI settings combination is most effective? A. Enable Fast Boot but keep USB devices in Boot Order B. Disable Fast Boot and USB boot C. Enable Secure Boot and remove USB devices from Boot Order D. Change CPU multiplier settings
VII. REFLECTION	
VIII. USE OF GENERATIVE AI	In preparing this Learning Exemplar (LE), the author used a Generative AI tool in order to streamline the content and compare CSS activity practices to come up with basic and common approach. The author reviewed and finalized the writing of the content. The author take full responsibility for the content of this Lesson Exemplar.

LESSON EXEMPLAR			
Learning Area	COMPUTER SYSTEMS SERVICING	**Lesson Exemplar**	4

I. OBJECTIVES	
A. Content Standard	The learners demonstrate an understanding of concepts and principles in setting up computer systems.
B. Performance Standard	The learners perform setting up computer systems, adhering to occupational health and safety standards.
C. Learning Competencies	Perform installation of system software and application software.
II. REFERENCES and MATERIALS	***References:*** *Curriculum Guide in Computer Systems Servicing* *https://www.deped.gov.ph/wp-content/uploads/2019/01/Computer-Systems-Servicing-NC-II-CG.pdf* Buenaagua, Samson. 2016. *CBLM in Computer Systems Servicing*. Naga College Foundation – Institute for Career Development. *TESDA Training Regulations 2013* *www.tesda.gov.ph/Downloadables/TR%20Computer%20Systems%20Servicing%20NC%20II%20.pdf* ***Materials**: Performance Task Sheets, Situation Analysis Cards, Steps in Creating Bootable Device cards* ***Tools**: Bootable Device for Installers (Windows Server 2012 or higher versions, Windows 10 or higher versions, Device Drivers, Antivirus, MS Office 2019 or higher versions) minimum of 16 GB.* ***Equipment**: Functional Computer Unit or Laptop Computers, multimedia projector*

III. CONTENT	Installation of Operating System and Application Software Disc Management and Partitioning	
IV. OBJECTIVES	In this lesson, learners will be able to: 1. Describe disc management concepts and partitioning structures before software installation. 2. Compute disc partitioning and allocation to ensure proper set-up for operating system and installation. 3. Identify the importance of allocating appropriate storage divisions and partitions in a computer system.	
V. PROCEDURES		
A. Activating Prior Knowledge	**1. Activating Prior Knowledge** *Previous Topic: Installing Operating System for Server Computer and Client Computer* **Activity 1: Picture Analysis: Server vs Client Computer** a. The teacher will show two images or video clip a.1- Server Computer with high-end system a.2- Client Computer (a simple desktop) b. Ask the students to observe and answer the following questions: b.1- What differences do you notice? b.2- What do you think each computer is used for? c. Let students write their answers on the board (or may be done through recitation). d. Teachers will provide feedback based on students' responses.	*This part of the lesson, which focuses on Activating Prior Knowledge and Establishing the Purpose of the Lesson, is essential in connecting students' previous understanding of server and client computers to the new topic of disk management and partitioning.* *Through picture analysis, learners are encouraged to observe, compare, and critically think about the differences in computer types and their functions, making learning more meaningful and contextual.*

	2. Establishing the Purpose of the Lesson **Activity 2: Real Life Connection Activity: Dividing Storage Space** ***Ask:*** *"If your computer's storage is like a cabinet, how would you divide it so that games, school files, and system files are separated?"* ***Ask:*** *"Why is dividing computer storage space helpful?"*	*The real-life connection activity further strengthens understanding by relating storage partitioning to familiar situations, such as organizing a cabinet. This phase is important because it prepares learners mentally for the lesson, stimulates curiosity, and highlights the relevance of disk management in real-world computer use and system organization.*
B. Instituting New Knowledge	**1. Presenting Examples** **Activity 3: "Quick Think: Where do files go?"** *Play a short video clip showing a person creating a file (a document, edited video, audio, etc.) and saving them on a computer.* Let students share ideas to surface the need for organized storage. *Ask: When you save a file on your computer, where do you think it is stored? Can you find it easily if the storage is not organized?* **2. Discussing New Concept** **GENERAL TOPIC: INSTALLATION OF OPERATING SYSTEM AND APPLICATION SOFTWARE** **LESSON 3: Disk Management & Partitioning** **What is Disk Management?** Disk Management is a tool or process used to organize, manage, and prepare a computer's storage device such as hard drives or SSDs for use especially during operating system installation**.**	*This part of the lesson is important in helping learners visualize and understand how files are stored in a computer through real-life and multimedia presentation. By showing a video clip of file creation and saving, students are guided to connect abstract concepts to actual computer processes. The "Quick Think" questions encourage learners to reflect on their own experiences, promoting curiosity and active participation. This stage is essential because it highlights the need for organized storage, setting the foundation for understanding disk management and partitioning as practical solutions for efficient file organization and easy data retrieval.*

	Importance of Disc Management 1. Prepares the storage for installation 2. Organizes data efficiently 3. Prevents installation errors 4. Supports system performance 5. Enables multi-boot systems 6. Ensures data safety  *Figure 1: Image generated by OpenAI, May 2, 2026, DALL-E 3*	*This part of the lesson highlights the importance of the teacher's mastery of content in effectively discussing Disk Management and Partitioning. A strong understanding of the topic allows the teacher to clearly explain technical concepts such as storage organization, partitioning steps, and system preparation in a simplified and student-friendly manner.* *Mastery ensures accurate demonstration of procedures, proper sequencing of steps, and the ability to connect concepts to real-life computer use. It also enables the teacher to confidently address student questions and misconceptions during discussion.* *Overall, content mastery is essential in making complex technical topics understandable, engaging, and meaningful for learners, especially in a hands-on subject like operating system installation.* *The use of visual representation or posters in presenting the importance of Disk Management is*

PARTITIONING A HARD DRIVE

Partitioning a hard drive means **dividing your total storage into smaller sections.** The goal is to decide how much space each partition will have.

How to Compute Partitions?

1. **Know the total drive size.**
   - Check your hard drive capacity (e.g., 500 GB or 1 TB).
   - 1 TB = 1000 GB (approximate for calculations).
2. **Decide the purpose of each partition.**

Partition	Purpose	Suggested Size
C:	OS and other programs	100 to 150 GB minimum
D:	Documents and other user data	Remaining Space
Optional	Back-up and recovery	50 to 100 GB

Example: On a 500 GB drive:

- C: 150 GB for OS and programs
- D: 300 GB for data
- Recovery: 50 GB

essential because it helps learners easily understand and remember key concepts. Visual aids make abstract and technical ideas more concrete, engaging, and learner-friendly. They also support clearer explanation, improve attention, and enhance retention of information, especially for topics involving processes and system organization.

The scaffolding approach is important in teaching the steps in computing partitioning and Disk Management because it allows learners to gradually build understanding from simple to complex tasks.

By breaking down procedures into manageable steps, students can better grasp how to compute disk space allocation and perform partitioning accurately.

The teacher plays a crucial role as a guide and facilitator—providing clear explanations, demonstrations, and continuous support while slowly reducing assistance as learners gain confidence.

	3. Use the formula; Partition Size = Total Drive Size × Desired Percentage **Example:** • Total Drive = 500 GB • OS Partition = 30% • OS Partition Size = 500 × 0.3 = 150 GB Remaining 70% → Other partitions (500 × 0.7 = 350 GB) **4. Convert units if needed.** • 1 GB = 1024 MB • Example: 150 GB × 1024 = 153,600 MB → needed when formatting in MB during Windows setup **5. Finalize the partitioning.** • Leave extra space for OS updates. • Don't make the OS partition too small; Windows + programs grow over time. • Data partition can be larger since user files usually take more space. **2. Partitioning During Windows Installation (Setup Stage)** 1. Open Disk/Partition Screen When installing Windows, proceed to the part where it asks: *"Where do you want to install Windows?"* 2. View Available Drives You will see a list of existing drives and partitions. 3. Delete Old Partitions (if needed) Select unwanted partitions and click Delete to create *Unallocated Space*.	*This approach ensures that students develop both conceptual understanding and practical skills in a structured and less overwhelming way.*

	4. Create New Partition Select the unallocated space, then click New to create a partition. 5. Set Partition Size Enter the size you want for the partition (e.g., for Drive C:). 6. Format the Partition Click Format to prepare the drive (usually NTFS file system). 7. Select the Partition Choose the formatted partition where Windows will be installed. 8. Proceed with Installation Click Next to install Windows on the selected drive. **3. Partitioning After Windows Installation (Using Disk Management Tool)** 1. Open Disk Management Tool o Right-click Start Menu o Click Disk Management 2. View Disks and Partitions You will see all drives, partitions, and available space. 3. Create New Volume o Right-click Unallocated Space o Select New Simple Volume 4. Set Volume Size Specify how much space to use. 5. Assign Drive Letter Choose a letter (e.g., D:, E:) 6. Format the Drive Select file system (usually NTFS) and complete formatting. 7. Finish Setup The new drive is now ready to use.	*This activity demonstrates the importance of the developing mastery stage in strengthening learners' computational and analytical skills in Disk Management and Partitioning. By providing tiered exercises (easy, average, and difficult), students are guided to progressively apply concepts of percentage-based computation in real-world storage allocation. This structured progression supports deeper understanding and skill development. The teacher's role is crucial in facilitating learning by guiding learners, checking*

	Developing Mastery **LEVEL 1 ACTIVITY**: **"Partition Size Computation for Windows Installation"** Compute partition sizes for OS and data drives using percentages and total drive sizes. For each scenario, calculate the size of each partition. Show your work. Write your answers in GB (and MB if asked). **1. Easy Level** A computer has a 500 GB hard drive. You need to allocate: • 30% for OS (C:) • 70% for Data (D:) **Questions:** a. How many GB will the OS partition have? b. How many GB will the Data partition have? **2. Average Level** A computer has a 1 TB (1000 GB) hard drive. You want to create: • C: drive for OS = 25% • D: drive for Documents and Programs = 60% • Recovery drive = 15%	*accuracy of solutions, and providing corrective feedback when needed.* *This stage helps ensure that learners not only understand the concepts but can also confidently perform partition size computations with increasing complexity.*

	Questions: a. Compute the size in GB for each partition. b. Convert the C: drive size into MB. **3. Difficult Level (Advanced with HOTS)** A server computer has a 2 TB (2000 GB) hard drive. The requirements are: • OS + Applications = 20% • User Data = 50% • Backup / Recovery = 25% • Future Expansion = 5% **Questions:** a. Compute the size of each partition in GB. b. Convert each partition size to MB. c. If the OS partition grows by 10% after updates, what will be its new size in GB?	

C. Demonstrating Knowledge and Skills	**1. Finding Practical Application** **LEVEL 2 ACTIVITY: "Case Study: Fix the Problem"** 1. Present the following scenario or problem to the class (may be done in a form of class brainstorming, think-pair-share, or as a group). 2. Give students enough time to analyze the scenario and prepare answers for the following questions. 3. Allow students to share their answers and provide feedback. ***Scenario 1: Slow and Cluttered Computer*** A student is complaining that their computer is very slow. After checking, you found out that all files (system files, videos, games, and documents) are stored in only one drive (C: drive). The storage is almost full. What disk management solution will you apply to improve performance and organize the files properly? ***Scenario 2: No Backup Space for Important Files*** A school office computer stores all files in one partition. One day, some important documents were accidentally deleted when the system was updated. How can partitioning help prevent this problem in the future? What changes will you suggest in disk management?	*This activity is presented in a case study format to help learners apply their knowledge of Disk Management and Partitioning in real-life situations. By analyzing practical problems, students are encouraged to think critically and connect theoretical concepts to actual computer issues.* *This approach is important because it develops problem-solving skills and allows learners to see the relevance of disk management in improving system performance, data safety, and proper OS installation.*

	Scenario 3: Installing New Operating System A technician is about to install a new operating system, but the hard drive has no separate partition for system files and user files. Everything is in one drive. What steps in disk management should be done before installing the OS to ensure proper setup and organization? **2. Making Generalization** *Ask: "After analyzing the different scenario that requires disc management, what changes would you make to improve the computer system using disk partitioning?"* **3. Evaluating Learning** **LEVEL 3 ACTIVITY**: **"Computing Actual Disc Allocation"** *Allow students to compute the disc allocation for each item.* 1. A 500 GB hard drive is divided equally into 2 partitions (C: and D:). How many GB will each partition have? 2. A 1 TB (1000 GB) hard drive is allocated as follows: -300 GB for System (C:) -The rest for Data (D:) 3. How many GB is allocated for the D: drive? A 750 GB disk is divided into 3 equal partitions. How much storage will each partition have? 4. A 600 GB hard drive is partitioned as follows: C: Drive = 200 GB D: Drive = 250 GB How much unused (free) space remains? 5. A technician has a 1 TB (1024 GB) disk and plans the following allocation: OS (C:) = 250 GB Applications (D:) = 300 GB Backup (E:) = remaining space How many GB will the E: drive have?	*The use of brainstorming, think-pair-share, or group discussion promotes collaboration, communication, and deeper understanding.* *This evaluation activity is designed to assess learners' understanding and application of Disk Management and Partitioning through actual computation of disk space allocation. By requiring students to show their solutions on tablet paper, it allows the teacher to evaluate both the correctness of answers and the process used in solving problems. This approach is important because it reinforces computational skills, promotes accuracy, and helps identify learners who need further guidance. It also ensures that students can independently apply concepts learned in real-world scenarios involving storage management.*

	4. Additional Activities for Enhancement **LEVEL 4 ACTIVITY: "Office Computer Audit"** Students will check (or interview personnel) on an office computer or laptop. Allow them to identify the following: 1. If the computer has one or multiple partitions 2. Approximate storage usage (full, half, or almost full) 3. Possible improvements in organization Give students enough time to make a short-written report or checklist.	*This optional activity is designed to extend learners' understanding of Disk Management and Partitioning by connecting classroom learning to real-world applications. Through an office computer audit, students are encouraged to observe or interview actual users, making the lesson more authentic and experiential. This approach is important because it develops learners' analytical and observational skills while reinforcing the relevance of disk management in real workplace settings. It also promotes independent learning, communication, and critical thinking as students evaluate storage usage and suggest practical improvements in system organization.*
VI. ASSESSMENT	**Part 1: MULTIPLE CHOICE** Read each question carefully. Select the letter of the correct answer. 1. What is the main purpose of Disk Management? A. To play games on the computer B. To organize and prepare storage devices for use C. To increase internet speed D. To install hardware components 2. Which of the following is NOT an importance of Disk Management? A. Prevents installation errors B. Supports system performance C. Deletes user accounts D. Ensures data safety	

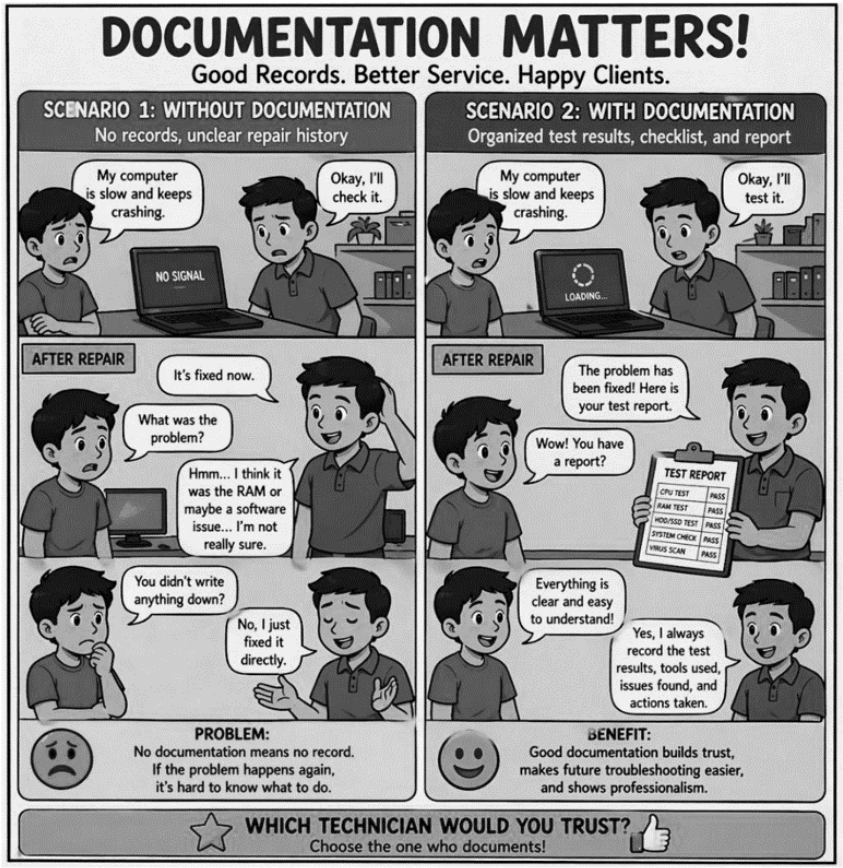
	3. What does partitioning mean? A. Deleting all files in the computer B. Dividing storage into smaller sections C. Installing antivirus software D. Updating Windows automatically 4. If a 500 GB hard drive is divided into 150 GB for C: drive, how much is left for D:? A. 150 GB B. 250 GB C. 300 GB D. 350 GB 5. What file system is commonly used when formatting a partition in Windows? A. FAT32 only B. NTFS C. EXE D. BIOS **Part 2: TRUE or FALSE** Read each item carefully. Write "TRUE" if the statement is correct, otherwise, write "FALSE" 1. Disk Management is used to organize and prepare storage devices before installing an operating system. 2. Partitioning means combining all storage into one large drive. 3. It is recommended to make the OS partition very small, so it saves more space. 4. Disk Management helps improve system performance and data organization. 5. The C: drive is usually used for system files and installed programs.
VII. REFLECTION	
VIII. USE OF GENERATIVE AI	In preparing this Learning Exemplar (LE), the author used a Generative AI tool in order to streamline the content and compare CSS activity practices to come up with a basic and common approach. The author reviewed and finalized the writing of the content. The authors take full responsibility for the content of this Lesson Exemplar.

LESSON EXEMPLAR			
Learning Area	COMPUTER SYSTEMS SERVICING	**Lesson Exemplar**	5

I. OBJECTIVES	
A. Content Standard	*The learners demonstrate an understanding of concepts and principles in setting up computer systems.*
B. Performance Standard	*The learners perform setting up computer systems, adhering to occupational health and safety standards.*
C. Learning Competencies	*Perform computer testing and documentation.*
II. REFERENCES and MATERIALS	***References:*** *Curriculum Guide in Computer Systems Servicing* *https://www.deped.gov.ph/wp-content/uploads/2019/01/Computer-Systems-Servicing-NC-II-CG.pdf* Buenaagua, Samson. 2016. *CBLM in Computer Systems Servicing*. Naga College Foundation – Institute for Career Development. *TESDA Training Regulations 2013* *www.tesda.gov.ph/Downloadables/TR%20Computer%20Systems%20Servicing%20NC%20II%20.pdf* ***Materials**: Learning Activity Sheet, Functional Desktop Computer or Laptop, hand tools, inventory and maintenance checklist.* ***Tools**: Bootable Device for Installers (Windows Server 2012 or higher versions, Windows 10 or higher versions, Device Drivers, Antivirus, MS Office 2019 or higher versions) minimum of 16 GB.* ***Equipment**: Functional Computer Unit or Laptop Computers, multimedia projector*

<table>
<tr><td>III. CONTENT</td><td>Computer Testing and Documentation
• Introduction to Computer Test and Documentation
• Documentation Tools and Formats</td><td></td></tr>
<tr><td>IV. OBJECTIVES</td><td>In this lesson, learners will be able to:
1. Describe the basic concepts of computer testing and documentation, including the different tools and formats used in recording technical reports.
2. Explain the importance of accurate, organized, and ethical documentation in computer servicing tasks.
3. Demonstrate use of documentation tools by creating a simple and well-organized computer testing report using a given format.</td><td></td></tr>
<tr><td colspan="2">V. PROCEDURES</td><td></td></tr>
<tr><td>A. Activating Prior Knowledge</td><td>1. Activating Prior Knowledge
Previous Topic: Computer Stress Test / Burning Test
Activity 1: Identify the Problem (Think-Pair-Share)
1. Read and analyze each situation carefully. Identify:
• if a stress test is needed
• what component should be tested
• the possible issue or problem
<table><tr><td>Situation 1: A newly assembled computer works normally during startup, but after several minutes of using editing software, the screen freezes and the system restarts unexpectedly.</td></tr><tr><td>Situation 2: A computer used for online games suddenly becomes very slow and produces loud fan noise after playing for 20–30 minutes.</td></tr><tr><td>Situation 3: After installing a new graphics card, the monitor displays distorted images and random colored lines whenever high-resolution videos are played.</td></tr><tr><td>Situation 4: A computer successfully boots and opens applications, but it suddenly shuts down whenever multiple programs are opened at the same time.</td></tr><tr><td>Situation 5: A school computer laboratory unit passes initial testing, but during continuous use for several hours, the keyboard and mouse stop responding while the monitor remains on.</td></tr></table></td><td>This activity helps learners recall and recognize their prior knowledge about Computer Stress Test/Burning Test through the analysis of common computer problems. Recognizing prior knowledge is important because it allows learners to connect previous learning experiences with the new lesson, improving understanding, participation, and critical thinking skills.</td></tr>
</table>

	2. Establishing the Purpose of the Lesson **Activity 2: "Technician for a Day" (Question Prompt)** 1. Ask learners to imagine: "You are a computer technician in a computer shop. After testing a unit, what information should you record before you move to the next computer?" 2. Let learners share ideas by writing their answers on a piece of paper or meta card. 3. Guide the learners or the class to the ideas focusing on the following: • test results • tools used • problems found • actions taken 4. Call at least 2 to 3 learners to summarize the ideas.	*In* Activity 2 (Technician for a Day), *learners are placed in a simulated real-world scenario that introduces the importance of documentation in computer servicing. The activity guides them to identify key information such as test results, tools used, problems found, and actions taken, helping them understand the role of proper record-keeping in technical work. Teacher facilitation and feedback ensure clarity and reinforce correct concepts.*
B. Instituting New Knowledge	**1. Presenting Examples** **Activity 3: "Before and After: Comparison Activity"** 1. Show two scenario / samples through a meta card / comic / poster / skit (which may be generated using AI tools): (Without Documentation) ***Scene 1:*** A client brings his computer to a technician for repair. After a short time, the technician tells the client that the computer is already fixed. The client asks what the problem was, but the technician hesitates and says he is not sure if it was the RAM or a software issue because he did not write anything down during the repair process. The client becomes confused and worried, thinking that if the problem happens again, there will be no record to guide the repair. The client leaves without full confidence in the service.	*This activity uses a visual and narrative comparison to help learners understand the importance of documentation in computer servicing. Through the "Before and After" scenarios, learners are guided to analyze the difference between working with and without proper documentation. The contrasting situations help develop critical thinking by showing real-life consequences such as confusion, lack of records, and loss of client trust versus organized reporting*

	(With Documentation) ***Scene 2:*** A client brings his computer to a technician for repair. After testing and fixing the unit, the technician informs the client that the problem has been resolved. The technician then presents a clear report showing the test results, the tools used, the issues found, and the actions taken during the repair. The client reads the documentation and feels satisfied because everything is organized and easy to understand. The client trusts the technician more because of the proper documentation provided. Note: The teacher may present the scenario using this comic.  *Figure 1: Image generated by OpenAI. May 5, 2026. DALL-E 3* 2. Let learners share ideas in class. 3. The teacher shall provide feedback and comments.	*and professional service. Learner discussion and teacher feedback further reinforce understanding of how documentation supports accuracy, reliability, and professionalism in computer repair.*

2. Discussing New Concept

GENERAL TOPIC: INSTALLATION OF OPERATING SYSTEM AND APPLICATION SOFTWARE

LESSON 6.1: Introduction to Computer Test and Documentation

What Computer Test and Documentation?

Computer test and documentation refer to the process of checking a computer system to make sure it is working properly and then recording the results and procedures for reference.

Computer test is the process of evaluating hardware and software to ensure that everything functions correctly. It may include:

- Checking if the computer turns on properly
- Testing components like keyboard, mouse, monitor, and printer
- Running diagnostic tools to detect errors
- Verifying software installation and system performance

Documentation is the process of writing down or recording all the important details about the computer system and the tests done. It may include:

- Test results and findings
- Hardware and software specifications
- Repair or troubleshooting steps done
- Maintenance logs and checklists

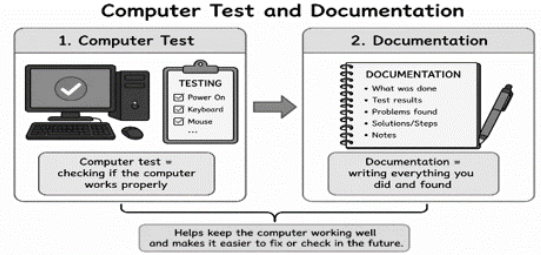


Figure 2: Image generated by OpenAI, May 5, 2026, DALL-E 3

	IMPORTANCE OF CONDUCTING COMPUTER TESTING AND DOCUMENTATION 1. Ensures Proper Functionality Computer testing helps verify if all hardware and software components are working correctly before use. 2. Detects Errors and Issues Early It allows identification of problems such as faulty hardware, software bugs, or installation errors before they become serious. 3. Improves System Reliability Regular testing ensures the computer system runs smoothly and consistently without unexpected failures. 4. Provides Accurate Records Documentation keeps a clear record of all tests performed, repairs made, and changes done to the system. 5. Helps in Troubleshooting Documented information makes it easier to diagnose and fix future problems quickly. 6. Supports Maintenance History Tracking It allows technicians or users to track what has been done to the computer over time. 7. Ensures Professional Practice Proper testing and documentation reflect organized, responsible, and professional IT work. 8. Saves Time and Cost Early detection of issues and clear records to reduce repeated repairs and unnecessary expenses.	*This lesson introduces learners to the concept of computer testing and documentation as essential processes in computer system servicing. Through discussion and examples, learners are guided to understand that computer testing involves checking hardware and software functionality, while documentation focuses on recording test results, procedures, and system information. The lesson emphasizes the importance of these processes in ensuring proper functionality, early detection of errors, improved system reliability, accurate record-keeping, effective troubleshooting, maintenance tracking, professional practice, and cost and time efficiency. The activities encourage learners to connect theoretical knowledge with real-world computer servicing practices.*

	3. Developing Mastery **Activity 4: "VALUING THE IMPORTANCE OF CONDUCTING COMPUTER TESTING AND DOCUMENTATION"** **Part 1 - BRAINSTORMING** 1. Divide the class into 10 small groups composed of 3-4 members. Each group shall accomplish Activity 1 in the Learning Activity Sheet for 10 minutes. 2. After accomplishing the Activity 1, each group will be assigned to discuss one scenario and identify the importance of conducting computer testing and documentation. 3. Each group must prepare a report in Activity 2, by answering the given questions: • How would computer troubleshooting be affected if technicians did not properly conduct testing and documentation? • If you were assigned as an IT technician, how would you improve the process of computer testing and make it more efficient and reliable? • Why do you think both computer testing and documentation should always go together instead of being done separately? 4. Final group output must be posted in designated areas. *Generalize by asking:* - Real-life examples in school, home or community - What problem could happen if this importance is ignored? - Why computer testing and documentation matters?	*This activity promotes collaborative learning and critical thinking as learners explore the importance of computer testing and documentation through group discussion and real-life application. In the brainstorming phase, learners analyze assigned concepts by providing examples, identifying possible problems if neglected, and explaining its significance. The gallery walk allows learners to interact with other groups' outputs, encouraging reflection, comparison, and deeper understanding. The quick synthesis reinforces learning by allowing learners to share insights and connect ideas, strengthening their appreciation of proper computer testing and documentation in real-world contexts.*

	Part 2 – GALLERY WALK 1. For 5 to 10 minutes, learners will walk around to read and analyze other groups' outputs. 2. Groups must identify one idea they agree with and post a green light icon, and one idea they find to be interesting and post an orange light icon. 3. The class must proceed with "Quick Synthesis" by discussing their findings and answers to the class.	
C. Demonstrating Knowledge and Skills	**1. Finding Practical Application** **Activity 5: "Test and Document Simulation"** 1. In groups, learners simulate a simple computer check using the computer built-in utility software such as the Task Manager (Note: The teacher may also introduce other third-party application) 2. Each group must perform a "mock test" of basic components (keyboard, mouse, monitor, etc.) 3. The teacher must present the template and demonstrate how to properly accomplish the same. 4. The groups must record their findings in a checklist and maintenance log sheet. 5. Each group will present their documentation to the class. 6. The teacher shall provide feedback and comments. *Note: Please see attached template in the Learning Activity Sheet.*	*This activity allows learners to apply their knowledge through a hands-on simulation of computer testing and documentation. In group work, learners perform a mock assessment of basic computer components and record their findings using a maintenance log sheet, reinforcing the importance of accurate documentation in technical tasks. The presentation of outputs develops communication and reporting skills, while teacher feedback ensures correct understanding of the process.* *Note: Explicit teaching is applied (I Do, We Do, You Do)*

RUBRICS FOR RATING THE GROUP PERFORMANCE AND OUTPUT

Criteria	4 – Excellent	3 – Very Satisfactory	2 – Satisfactory	1 – Needs Improvement
Computer Testing Performance	(90% - 100%) Performed ALL required computer checks correctly and confidently using appropriate tools/utilities.	75% - 89% Performed most computer checks correctly with minimal assistance.	(50% - 74%) Performed some computer checks correctly but needed guidance.	(50% and below) Unable to properly perform the required computer checks.
Accuracy and Completeness of Documentation	ALL 3 tables were accurately and correctly accomplished.	2 tables were accurately and correctly accomplished	1 table were accurately and correctly accomplished	Documentation was incomplete, unclear, or inaccurate.
Group Presentation and Participation	ALL members actively participated and clearly explained their findings and procedures.	3 members participated and explained the activity clearly.	2 members participated and explanations lacked clarity.	1 member participation and presentation

GRADE CONVERSION TABLE

Score Range	Percentage Equivalent	Descriptive Rating
11 – 12	100	Outstanding
8 – 10	90	Very Satisfactory
5 – 7	85	Satisfactory
3 – 4	80	Fairly Satisfactory
1 – 2	75	Did Not Meet Expectations

	2. Making Generalization After reporting, ask the following questions in class: 1. How would computer troubleshooting be affected if technicians did not properly conduct testing and documentation? 2. If you were assigned as an IT technician, how would you improve the process of computer testing and make it more efficient and reliable? 3. Why do you think both computer testing and documentation should always go together instead of being done separately? *Note: The teacher must support the answers with real-life examples.* **3. Evaluating Learning** **Activity 6: "Basic Recall: Testing and Documentation"** Distribute the short test to the class. Allow learners read, analyze and answer the following questions. **Part I – Identification** Identify whether the statement refers to *Computer Test* or *Documentation.* 1. _____ - Checking if the keyboard is working properly. 2. _____ - Writing down the repair done on a computer. 3. _____ - Running diagnostic tools to detect errors. 4. _____ - Recording test results and findings.	*The generalization questions further deepen learning by encouraging critical thinking, allowing learners to reflect on the role of testing and documentation in troubleshooting, efficiency, and professional IT practice supported by real-life applications.* *This evaluation activity assesses learners' understanding of the basic concepts of computer testing and documentation through simple recall-based exercises. The identification part helps learners distinguish between testing and documentation processes, while the true or false section checks their understanding of key concepts and their importance in real-world applications. This activity reinforces foundational knowledge, ensures concept clarity, and allows the teacher to identify learning gaps for immediate remediation or reinforcement.*

	Part II – True or False Write *True* if the statement is correct and *False* if not. 1. _____ - Computer testing is done only after documentation. 2. _____ - Documentation helps keep records of computer repairs. 3. _____ - Testing helps identify computer problems early. 4. _____ - Documentation is not important in troubleshooting.	
VI. ASSESSMENT	*Note: The assessment for this topic is / will be integrated after the entire discussion in Learning Competencies 5 (Computer Software Installation) and 6 (Computer Testing and Documentation) has been completed.*	
VII. REFLECTION		
VIII – USE OF GENERATIVE AI	In preparing this Learning Exemplar (LE), the author used a Generative AI tool in order to streamline the content and compare CSS activity practices to come up with basic and common approach. The author reviewed and finalized the writing of the content. The author takes full responsibility for the content of this Lesson Exemplar.	