

Bruner's E1: Engagement Lens

Process	4C Super Skill	Engine Management System Activity
<p>1) After connecting the scan-tool with a scope probe, insert the probe into a check terminal wish to measuring. (Be sure to connect the grounding cable).</p> <p>2) On the initial main screen, enter [SCOPE] and select [SINGLE AUTO SET (CH1)].</p> <p>3) The wave form is measured according to the adjustment of time axis and voltage axis.</p>	Communicating	<p>Discuss the importance of previous knowledge in understanding engine diagnostics, emphasizing the need to apply past learning to the current task.</p> <p>Actively listen to instructions on connecting the scan-tool and ask questions to clarify any uncertainties regarding the setup process.</p>
	Collaborating	<p>Work collaboratively in teams to create a K-W-H-L chart outlining what each team member knows, wants to know, how they will find relevant data, and what they have learned about using the scan-tool for engine diagnostics.</p> <p>Engage in team-based learning activities to research and discuss various engine diagnostic techniques found on the web, fostering collaboration and knowledge sharing among team members.</p>
	Critical Thinking and Problem Solving	<p>Reflect on how previous learning experiences with diagnostic tools can be applied to effectively utilize the scope probe for measuring waveforms in the Engine Management System.</p> <p>Analyze and interpret the waveforms measured by the scope probe, applying critical thinking skills to adjust the time axis and voltage axis to accurately diagnose engine issues.</p> <p>Engage in a debate about the most effective diagnostic methods for troubleshooting engine problems, defending personal opinions with evidence and reasoning.</p>
	Creating and Innovating	<p>Generate creative solutions to engine diagnostic challenges by exploring "what if" scenarios and proposing alternative approaches to measuring waveforms and interpreting diagnostic data.</p> <p>Design unique questions related to engine diagnostics to stimulate class discussion and encourage classmates to think critically about the diagnostic</p>

		<p>process.</p> <p>Use digital tools to compose a digital story illustrating a successful diagnostic process, incorporating original ideas and experiences to communicate effective troubleshooting techniques to fellow students.</p>
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<p>1) Turn on the 'IGNITION KEY' and activate the system.</p> <p>2) Locate the scanner in better place to measure and insert the connector into the D.L.C terminal.</p> <p>3) When power on the scanner, the initial main screen will be displayed.</p>	Communicating	<p>Discuss the importance of previous knowledge in understanding the engine management system. Actively listen to each other's ideas on how to activate the system.</p> <p>Ask questions about the steps involved in activating the system and share original ideas using digital technologies to troubleshoot any issues encountered.</p>
	Collaborating	<p>Work collaboratively as a team to complete a K-W-H-L chart outlining what each member knows, wants to know, how to find relevant data, and what they have learned.</p> <p>Engage in team-based web searches to gather data related to engine management and discuss its relevance to the activation process.</p>
	Critical Thinking and Problem Solving	<p>Connect previous learning about engine systems to the current task of activating the system. Engage in a debate about the importance of proper system activation.</p> <p>Use internet resources to illustrate and communicate original ideas for troubleshooting any problems that may arise during the activation process.</p>
	Creating and Innovating	<p>Engage in inquisitive activities to explore alternative methods of system activation. Design and ask thought-provoking questions about the process.</p> <p>Work individually or in teams to compose digital stories explaining the steps involved in activating the engine management system.</p>

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<p>1) Select [Scan] on the main screen, then select [ENHANCED SCAN] on the selection screen.</p> <p>2) Select [KOREAN] in the country selection screen, then select [HYUNDAI] in the manufacturer selection screen.</p> <p>3) Select [HYUNDAI MOTORS], then select [EF SONATA] on the vehicle model selection screen.</p> <p>4) Select [ENGINE CONTROL DOHC] on the vehicle selection submenu screen. The following screen will appear if the communication with the engine ECU is successful.</p> <p>5) A communication error screen will appear if the diagnostics cable connection is faulty or if the system malfunctions. Check the related wiring and circuits and try again.</p> <p>6) Click [SELF DIAGNOSIS] to display the trouble codes.</p> <p>7) Press [ESC] to leave the screen, then select [CURRENT DATA] to check the system's service data.</p> <p>Checklist for addressing</p>	Communicating	<p>Discuss the importance of previous knowledge in understanding the steps involved in the system activation process.</p> <p>Actively listen to instructions on selecting the appropriate options on the scanner's screen.</p>
	Collaborating	<p>Work collaboratively in teams to complete a K-W-H-L chart outlining what each member knows, wants to know, how to find data, and what they've learned.</p> <p>Engage in discussions with peers to troubleshoot potential communication errors and find solutions together.</p>
	Critical Thinking and Problem Solving	<p>Reflect on how previous learning about vehicle diagnostics and communication systems is relevant to the current task.</p> <p>Analyze potential reasons for communication errors, such as faulty wiring or incorrect vehicle selection, and propose solutions.</p> <p>Use critical thinking skills to verify if the ignition key is in the ON position, as it could affect communication with the vehicle's ECU.</p>
	Creating and Innovating	<p>Design questions to clarify any uncertainties about the system activation process and discuss them with the class or team.</p> <p>Utilize digital tools to create visual aids or diagrams illustrating the steps involved in the diagnostic process.</p>

a communication error		
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1) Check the wiring connections.

2) Verify that the vehicle type selected corresponds to the actual vehicle.

3) Check if the ignition key is in the ON position.

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<p>1) When the engine warning lamp continuously lights up, solve the problem by using the scanner. When they are not erased, set the variable control knob for major sensors to normal value, and erase them again.</p> <p>2) When the engine alarm lamp keeps lighting up and in an emergency condition without scanner, push the emergency stop switch and turn it on after 15 seconds to clear the memory</p>	Communicating	<p>Discuss the importance of understanding engine warning lamp signals and their implications for vehicle safety.</p> <p>Actively listen to explanations on how to troubleshoot engine warning lamp issues and ask clarifying questions.</p>
	Collaborating	<p>Work collaboratively to create a K-W-H-L chart outlining what each team member knows about engine warning lamp issues, what they want to learn, how they will find relevant data, and what they have learned.</p> <p>Engage in team-based discussions to search the web for additional data on engine warning lamp troubleshooting methods.</p>
	Critical Thinking and Problem Solving	<p>Analyze previous experiences with engine warning lamp issues to determine their relevance to current troubleshooting tasks.</p> <p>Connect new learning about engine warning lamp troubleshooting to broader concepts in vehicle maintenance and repair.</p> <p>Debate the effectiveness of different emergency procedures for clearing engine warning lamp memory in urgent situations.</p>
	Creating and Innovating	<p>Design creative questions to test understanding of engine warning lamp diagnostic procedures and emergency protocols.</p> <p>Work individually or in teams to compose digital stories illustrating effective troubleshooting techniques for engine warning lamp issues.</p>

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<p>1) When there is any trouble in the system, the ECU senses it, lighting the warning lamp.</p> <p>2) ECU changes the mode of troubled sensors and actuators into Fail Safe to control them, when engine warning lamps light up.</p>	Communicating	<p>Discuss the importance of previous knowledge in understanding engine warning systems and troubleshooting methods.</p> <p>Actively listen to explanations of how the ECU detects system troubles and changes the mode of sensors and actuators during Fail Safe operation.</p>
	Collaborating	<p>Work in teams to complete a K-W-H-L chart about engine warning systems: What team members know, want to know, how they will find relevant data, and what they have learned.</p> <p>Engage in collaborative discussions with students to analyze engine warning system data and how it relates to troubleshooting techniques.</p>
	Critical Thinking and Problem Solving	<p>Explain how previous learning about engine systems is relevant to understanding and diagnosing system troubles.</p> <p>Debate different approaches to troubleshooting engine warning lights and discuss the reasons behind each team member's stance.</p> <p>Use Internet resources to research and present original ideas and stories related to innovative troubleshooting methods for engine management systems.</p>
	Creating and Innovating	<p>Design questions to test understanding of engine warning system concepts and share them with the class for discussion and exploration.</p> <p>Use digital tools to compose a digital story explaining how engine management systems detect and respond to system troubles.</p>

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<p>1) Check terminal is connected to sensors, actuators of EMS control circuit.</p> <p>2) Trainee exercises test of voltage, current and resistance of each check terminal of EMS with multi-tester.</p>	Communicating	<p>Actively listen to instructions on connecting terminals to sensors and actuators of the EMS control circuit.</p> <p>Discuss the importance of understanding voltage, current, and resistance measurements in troubleshooting EMS issues with fellow trainees.</p>
	Collaborating	<p>Work in teams to complete a K-W-H-L chart outlining what each member knows, wants to know, how to find relevant data, and what they have learned about EMS testing.</p> <p>Engage in collaborative learning activities with students in other locations to share experiences and best practices in EMS diagnostics.</p>
	Critical Thinking and Problem Solving	<p>Explain how previous knowledge of electrical systems is relevant to understanding EMS control circuits and diagnostic procedures.</p> <p>Debate different approaches to EMS testing methods and justify positions based on their effectiveness and efficiency in diagnosing issues.</p> <p>Use internet resources to research and compare EMS testing techniques, evaluating the credibility and reliability of the information found.</p>
	Creating and Innovating	<p>Design new questions to challenge classmates' understanding of EMS diagnostics and encourage critical thinking during group discussions.</p> <p>Work individually or in teams to develop digital stories illustrating real-world scenarios where EMS testing skills are essential for problem-solving.</p>