

Bruner's E5: Evaluation Lens

Process	4C Super Skill	Engine Management System Activity
<p>2-1. Plug the single-phase 2P 240V power cord and apply to the normal power line DC 12V, which is rectified through direct-current power supply.</p> <p>2-2. Turn on the key switch, after turning on the emergency stop switch to clockwise direction, to activate the ECU, sensors, and actuator.</p> <p>2-3. Verify the sensor value change, trouble code, and system operation change (ignition time and fuel injection amount), when the injector is operated and a spark is formed at the ignition plug with adjustment of variable output control knob of TPS Vol.</p> <p>[Reference] - TPS Knob should be positioned at "0". (end to counterclockwise direction) - When TPS Vol. is turned to clockwise direction, the acceleration speed of intake/exhaust air is increased, and the injector and ignition plug, operation is changed.</p>	Communicating	<p>Demonstrate mastery of engine management concepts through an oral presentation, explaining the process of activating the system and verifying sensor values, trouble codes, and system operation changes. Discuss the evaluation of engine tuning tasks and justify adjustments made.</p> <p>Evaluate digital resources for learning about engine management systems and discuss findings with the class, highlighting useful tools for diagnostics and performance optimization. Publish online artwork or diagrams with commentary demonstrating understanding of engine components and operations.</p>
	Collaborating	<p>Complete peer assessments for team members involved in troubleshooting engine performance issues, providing constructive feedback on contributions and problem-solving strategies. Use collaborative electronic tools to evaluate engine management topics or completed tasks as a team.</p> <p>Mentor each other within teams to improve understanding of engine management concepts and provide feedback on diagnostic procedures and tuning strategies. Utilize cooperative learning structures like Jigsaw to evaluate engine performance scenarios collaboratively.</p>
	Critical Thinking and Problem Solving	<p>Reflect on the value of engine management learning in real-life situations, discussing its application in automotive diagnostics and repair. Complete a Plus, Minus, Interesting (PMI) model to evaluate engine tuning strategies and their impacts on vehicle performance.</p> <p>Debate controversial issues related to engine technology, such as the trade-</p>

		<p>offs between performance and environmental impact. Link class learning to real-world problems in automotive engineering and conduct a cost-benefit analysis of different engine tuning approaches.</p>
	<p>Creating and Innovating</p>	<p>Complete a SWOT analysis of proposed changes to engine management systems, identifying strengths, weaknesses, opportunities, and threats to performance and efficiency. Use digital tools to analyze engine performance data and evaluate theories for optimizing engine operation.</p> <p>Design a model of legal and ethical behaviors when using engine diagnostic tools and software, ensuring responsible and accountable use of technology. Create open-ended assessment tasks that challenge students to apply engine management knowledge in novel scenarios.</p>

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<p>2-4. Verify the output value change, trouble code output, and system operation change (ignition time and fuel injection amount), using variable control knob of TPS, ATS, WTS, MAP and O2.</p> <p>[Reference] How to set up – The trouble code is produced and the warning lamp lights up when the setting is inadequate.</p>	Communicating	<p>Demonstrate mastery of engine management concepts through an oral presentation, explaining the process of verifying output value changes and trouble code outputs using variable control knobs. Discuss the evaluation of engine diagnostic tasks, such as interpreting trouble codes and adjusting sensor controls, with classmates.</p> <p>Evaluate digital resources related to engine management for use in diagnosing engine performance issues and discuss findings with the class, justifying the selection of specific tools for completing diagnostic tasks effectively. Publish online artwork or presentations showcasing understanding of engine diagnostic procedures and their evaluation.</p>
	Collaborating	<p>Complete peer assessments for members in your team, providing feedback on their understanding of engine diagnostic procedures and troubleshooting techniques. Mentor each other in a team to improve understanding and application of engine management concepts, fostering collaborative learning.</p> <p>Use collaborative tools like Kagan's Jig-Saw structure or the Kivunja Star Graphic Organizer to evaluate engine management topics or units completed, working in teams to analyze system operation changes and trouble code outputs and identify areas for improvement.</p>
	Critical Thinking and Problem Solving	<p>Reflect on engine management concepts learned and discuss their value in real-life scenarios, considering how diagnostic procedures apply to solving engine performance problems outside the classroom. Complete a Plus, Minus, Interesting (PMI) model of engine diagnostic tasks to evaluate their effectiveness and identify areas</p>

		<p>for improvement.</p> <p>Debate current controversial issues in engine management, such as the impact of sensor adjustments on fuel efficiency or emissions, and explore connections between class work and real-world problem-solving in automotive technology. Recognize bias in online resources related to engine diagnostics and evaluate their reliability.</p>
	Creating and Innovating	<p>Complete a SWOT Analysis of proposed changes to engine diagnostic procedures, identifying strengths, weaknesses, opportunities, and threats in implementing new diagnostic techniques or tools. Design a model of legal and ethical behaviours when using digital tools for engine diagnostics, considering privacy and data security concerns.</p> <p>Create personal portfolios showcasing understanding and application of engine management concepts, assessing each other's portfolios to identify strengths and areas for improvement. Show links between completed engine management units and upcoming topics, demonstrating continuity and progression of learning.</p>

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2-5. When the equipment stops, set the TPS knob at the default position and turn the ignition key off.	Communicating	<p>Demonstrate mastery of setting the TPS knob at the default position through an oral presentation. Discuss the evaluation of the task, emphasizing the importance of proper shutdown procedures.</p> <p>Evaluate digital resources related to engine management systems and share findings with the class, highlighting the significance of correct TPS knob adjustment in equipment shutdown.</p>
	Collaborating	<p>Complete peer assessments for team members regarding their understanding of setting the TPS knob at the default position. Mentor each other on the importance of proper shutdown procedures and provide constructive feedback.</p> <p>Work in teams to evaluate the effectiveness of the Kivunja Star Graphic Organizer in understanding engine management concepts. Collaborate using electronic tools to assess the engine management topic covered in the activity.</p>
	Critical Thinking and Problem Solving	<p>Reflect on the learning outcomes of the activity and discuss the real-life implications of setting the TPS knob correctly during equipment shutdown. Complete a PMI model to analyze the topic's strengths, weaknesses, and interesting aspects.</p> <p>Debate the importance of proper shutdown procedures in engine management and its impact on equipment longevity. Recognize bias in online resources regarding engine management systems and evaluate their reliability.</p>

	<p>Creating and Innovating</p>	<p>Complete a SWOT analysis of the proposed changes to the engine management unit, considering the importance of proper shutdown procedures. Design a model demonstrating legal and ethical behaviors when using digital tools for engine diagnostics.</p> <p>Use formative assessment to improve performance in setting the TPS knob at the default position. Create a personal portfolio showcasing understanding of engine management concepts and assess each other's portfolios for completeness and accuracy.</p>
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