



Republic of the Philippines
Department of Education

DAILY LESSON PLAN

Quarter:	4 th Quarter	Week:	Week 4	Learning Area:	SCIENCE
MELCS	Construct a model to demonstrate that heat can do work. (S9FE-IVf-36)			Grade Level:	Grade 9
Lesson Plan	Monday	Tuesday	Wednesday	Thursday	Friday
I. Objectives	1. Explain how heat energy can be converted into mechanical work. 2. Identify real-world examples of heat engines and heat-driven systems. 3. Construct a simple model to demonstrate that heat can do work.				
II. Subject Matter	Topic: Demonstrating How Heat Can Do Work Key Concepts: Heat energy, work, thermodynamics, heat engines, energy conversion References: Science Grade 9 Learner's Module, DepEd Learning Resource Portal Other Learning Resources: Videos, diagrams, experiment kits, worksheets				
III. Learning Activities					
A. Recall	Define energy, heat, and work.	Recall the Law of Conservation of Energy.	Review conduction, convection, and radiation as heat transfer methods.	Discuss previous lessons on thermodynamics.	Identify examples where heat energy is used to perform work.
B. Motivation	Show a short video of a steam engine or a thermal power plant.	Ask: "How does heat energy make a train move?"	Demonstrate a simple heat-powered toy (e.g., a radiometer or steam turbine).	Present real-life scenarios where heat energy is used (e.g., car engines, turbines).	Ask: "What happens if we remove heat from these systems?"
Lesson Proper					

C. Presentation	Explain how heat energy is converted into mechanical work.	Discuss the principles behind steam engines and internal combustion engines.	Show diagrams of heat engines and explain how they function.	Introduce the concept of thermal expansion and its applications.	Discuss historical and modern uses of heat engines.
D. Guided Practice	Group activity: Identify and analyze different heat engines.	Experiment: Observe how a balloon expands when placed over a heated bottle.	Analyze how heat transfer enables movement in turbines.	Small group discussion: Identify daily life examples of heat doing work.	Question-and-answer session on heat energy and its applications.
E. Independent Practice	Individual task: Draw and label a basic heat engine model.	Research different energy sources used for heat engines.	Write a short paragraph explaining how heat energy powers a steam engine.	Compare renewable and non-renewable heat sources.	Predict what happens when a heat engine loses heat energy.
F. Application	Construct a simple model demonstrating heat doing work (e.g., a steam turbine using a boiling pot).	Conduct an experiment using a heat-powered pinwheel.	Debate: "Are heat engines still relevant in today's world?"	Design a poster explaining how heat can be converted into work.	Present their models and explain how they work.
G. Generalization	Recap how heat energy can be converted into mechanical work.	Summarize the importance of heat engines in daily life.	- Discuss how advancements in technology improve heat engines.	Ask students to reflect on how they use heat energy daily.	Discuss sustainable alternatives to traditional heat engines.
IV. Evaluation	Formative Test (1-5 items): Identify types of heat engines.	Short Quiz: Explain how heat energy is converted to work.	Experiment Analysis: Observe and explain a heat-based experiment.	Peer Assessment: Evaluate a classmate's heat engine model.	Self-Assessment: Rate their understanding of energy conversion.

V. Assignment	Research and describe a real-world heat engine.	Write an essay on how heat energy impacts modern industry.	Interview a mechanic or engineer about how engines work.	Observe heat transfer in daily life and record examples.	Create a simple infographic on energy conversion from heat to work. _____
Remarks					
Signature:					
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