LESSON PLAN TEMPLATE

Lesson Title	Dynamics of Motion: Unifying Translational and Rotational Physics in Daily Life
Learning Area/s	General Science
Name of Teacher/s	DEPED TAMBAYAN PH
Grade Level and Section	www.depedtambayanph.net
No. of Sessions	4 Sessions (1 Week)
References	Uploaded Files: SHS_GS_Q1_LAS_LE1.pdf, SHS_GS_Q1_LE1.pdf
Declaration of AI use	This lesson plan was co-created using Gemini AI to assist with unpacking competencies into a 4-session learning design, structuring activities, and assessment formulation.

Intentions. Meaningful learning experiences are anchored in how we frame them. Start by deciding what you want learners to master by the end of the lesson – keep it clear and simple.	
Learning Competency and Curriculum Standards:	**Learning Competency:** Applications of Translational and Rotational Motion: • Compare and contrast translational and rotational motion in terms of their respective linear and angular quantities. • Demonstrate through simple activities the relationship between linear and angular quantities in human movement and ergonomic designs. **Content Standards:** • Physics principles apply to numerous aspects of everyday living. • Understanding linear and angular quantities to describe motion helps in the design of efficient machines. • The efficiency of simple and compound machines can be improved by applying basic physics principles. • Hydraulic systems exploit the relationship between pressure, force, and area to multiply forces and perform tasks. • Analysis of electricity generation, consumption patterns, and energy-efficiency practices can lead to better energy supply and management. • An understanding of the properties of light and sound leads to their safe and productive application. • Past research in the field of chemistry provides the foundations for the development of helpful products and processes. • Household and personal care products contain chemical substances that determine their properties and guide their proper use and disposal.

	Performance Standards: By the end of the term, learners identify general physics principles and their applications in daily life. They use scientific principles to solve problems, make informed decisions, and illustrate the applications of physics for self, society, and the environment. They design simple and compound machines and hydraulic systems to demonstrate applications of force, torque, center of mass, and hydraulic-related principles. They evaluate energy-efficient practices in electricity supply and consumption at home and local businesses and explore the advantages and drawbacks of light and sound in medical imaging, security, communication, and entertainment.			
	Session 1	**Session 2**	**Session 3**	**Session 4**
Learning Objectives:	By the end of the session, learners should be able to: ● Identify real-life examples of translational and rotational motion in daily activities. ● Explain the basic physics principles involved in captured daily moments using everyday language.	By the end of the session, learners should be able to: ● Compare and contrast translational and rotational motion quantities (e.g., d vs. θ, v vs. ω). ● Match linear quantities with their corresponding angular counterparts.	By the end of the session, learners should be able to: ● Demonstrate the relationship between linear and angular quantities ($v = r\omega$) through human movement. ● Discuss how ergonomics applies physics to improve the efficiency of simple tools.	By the end of the session, learners should be able to: ● Explain the role of physics in safety designs like helmets and airbags using concepts of impulse and momentum. ● Evaluate how materials and design minimize force during impact in motion-related accidents.
Learner Context:	● Inclusive classroom: Use of visual prompts (photos/videos) supports learners with diverse literacy levels. ● Peer-to-peer sharing (Think-Pair-Share) accommodates learners who benefit from social processing.	● Scaffolding for mathematical barriers: Use of visual analogies (4 Pics 1 Word) to simplify abstract quantities. ● Hands-on demonstrations help kinesthetic learners grasp the difference between sliding and spinning.	● Kinesthetic learning: Physically moving limbs to feel the 'radius' effect on linear speed. ● Social learning: Group work for ergonomic analysis encourages collaboration among diverse learners.	● Safety considerations: Egg drop experiment requires clear instructions and supervised handling. ● Star-rating feedback system provides non-threatening correction for learners with low confidence.
Learning Experience. Identify activities and interactions to help learners gain knowledge, skills, or understanding in a purposeful way.				
Pre-Lesson:	**Think-Pair-Share:** Students reflect for 2 minutes on the question: 'Where do you see physics in your daily life?' before sharing with a partner.	**4 Pics 1 Word (Physics Edition):** A visual game to retrieve prior knowledge about motion, force, and energy from the previous session.	**Body Check:** Students swing their arms at a constant speed and observe how their hand moves faster than their elbow.	**Prompt:** 'Have you ever wondered why helmets are required on motorcycles or how airbags protect people?' View short car crash simulation clips.

Flow:	• **Activity:** 'Captured Moments' - Students browse their phone galleries or magazines to find 5 photos of motion. • **Analysis:** For each photo, students categorize the motion as translational (sliding, walking) or rotational (wheels turning, fans). • **Scaffolding:** The teacher writes key ideas on the board (motion, force, energy) to help students bridge everyday terms with scientific concepts. • **Check for Understanding:** 'If Physics Disappeared' scenario - students imagine a world without these motion principles.	• **Direct Instruction:** Using a table to contrast Linear Displacement (s) vs. Angular Displacement (θ), Linear Velocity (v) vs. Angular Velocity (ω), and Linear Acceleration (a) vs. Angular Acceleration (α). • **Active Retrieval:** 'Physics Charades' - Students act out a quantity (e.g., 'spinning faster and faster' for angular acceleration) while others guess. • **Modeling:** The teacher demonstrates a rolling ball, showing that it possesses both translational and rotational motion simultaneously.	• **Experiment:** Students use strings of different lengths (radii) to swing an object at the same angular speed, observing the difference in linear speed and tension. • **Application:** Analysis of ergonomic tools (e.g., long-handled wrenches vs. short ones). How does the 'radius' (handle length) affect the 'torque' (rotational force)? • **Social Learning:** Groups brainstorm improvements for a common household tool (like a manual juice squeezer) using the $v = r\omega$ principle.	• **Investigation:** 'Egg Drop Demo' - Dropping a ball/egg onto different surfaces (towel, foam, cardboard) to observe impact. Relate to impulse ($F \Delta t = m \Delta v$). • **Explanation:** Discussion on how increasing the 'Time of Impact' reduces the 'Force' felt by the object. • **Role-Play:** Groups act out scenarios (e.g., biker falling with a helmet, gymnast landing on a mat) explaining the physics of safety. • **Social Learning:** Peer evaluation of role-plays using a 3-star rating system (1 star for attempt, 3 for clear physics explanation).
Learning Resources:	• Personal mobile devices/Magazines • Projector/Smart TV • Printed Activity Sheets (LAS No. 1)	• Chalkboard/Whiteboard • Ball/Wheel for demonstration • PowerPoint presentation	• Strings, small weights, measuring tapes • Samples of tools (wrench, scissors, hammer) • Worksheets	• Eggs/Balls, foam, towels, cardboard • Crash simulation videos • Role-play rubric
Opportunities for integration:	**Media Literacy:** Evaluating the accuracy of physics representations in social media and photography.	**Mathematics:** Integration of geometry (radii and arcs) when discussing angular displacement.	**Health/PE:** Body mechanics and injury prevention through proper form in sports and lifting.	**Values/DRRM:** Promoting a culture of safety and adherence to road safety laws (Helmet Law).
Assessment. Assessments reveal what learners have gained and what they still need help with.				
Formative Assessment:	**Synthesis Table:** Students complete a table identifying the 'What is happening', 'Physics concept', and 'Application' for their selected photos.	**Quantity Matching:** A short worksheet where students must connect the linear variable to its rotational partner and the correct unit (e.g., m/s to rad/s).	**Exit Ticket:** 'Why does a longer wrench make it easier to loosen a bolt?' Explain using the relationship between radius and force/motion.	**Role-Play Rubric:** Assessment based on scenario clarity, correct use of safety device, and accuracy of physics explanation (Impulse/Momentum).

Ways Forward. Meaningful learning can also happen beyond the classroom. Pause and reflect on what happened today.				
Extended learning opportunities:	Students are tasked to observe a household chore (e.g., sweeping vs. using a vacuum) and note which motion types are involved.	Identify one object at home that only rotates and one that only translates.	Find a tool at home that you find 'hard to use' and suggest one change based on the physics of rotation.	Interview a family member about a safety feature in their vehicle or workplace and explain the physics behind it to them.
Reflections:	How did selecting your own photos help you see physics as part of your identity and environment?	Which quantity was harder to visualize, the linear or the angular? Why?	How does understanding the 'radius' of your movement change the way you perform physical tasks?	Does knowing the physics of impact make you more likely to wear safety gear? Why or why not?