

SNS COLLEGE OF PHYSIOTHERAPY (Affiliated by the Tamil Nadu Dr. M. G. R. Medical University, Chennai.)



Below are 10 Physics Puzzles designed using a Harvard Active Learning structure,

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Bloom's Taxonomy, and Design Thinking (DT) levels.
These puzzles are NOT MCQs, NOT crosswords, but case-based, scenario-based, fun, practical-thinking puzzles suitable for 10 groups (99 students).

Each puzzle includes:

- **✓** Puzzle Title
- **✓** Short Scenario
- **✓** Group Task / Puzzle
- **✓** Bloom's Level
- **✓** DT Stage
- ✓ Rules & Regulations (common for all puzzles)

COMMON RULES & REGULATIONS FOR ALL PUZZLES

Group Formation

Divide students into **10 groups** (9–10 students per group).

Each group will receive 1 unique puzzle.

Time Limits

Reading the scenario – 2 minutes

Discussion – 8 minutes

Final presentation -2 minutes per group

Behaviour & Teamwork

Every group member must contribute at least **one idea**.

No use of mobile phones or the internet.

You may use paper, pen, classroom objects, and your imagination.

Presentation Rules

Present your answer in simple steps.



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Must include **physics justification** (laws, principles, formulas but NO solving lengthy derivations).

Creative thinking is encouraged — diagrams, role play, storytelling allowed.

Instructor Rules

The teacher must NOT give hints.

The scoring will be based on:

Accuracy - 40%

Creativity – 30%

Teamwork - 20%

Clarity – 10%

PHYSICS PUZZLES (Harvard Method + Bloom's + DT)

1) Puzzle: The Falling Water Bottle Mystery

Scenario:

A 1-litre bottle filled half with water is dropped from the 3rd floor. While falling, students see water staying at the same level and not splashing upward.

Task:

Explain why the water neither moves up nor spills until it hits the ground. Present using a short skit.

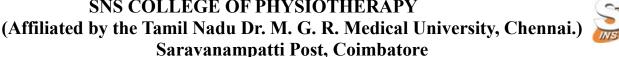
Physics Concept: Free fall, inertial frames

Bloom's Level: Understand

DT Level: *Empathize* (observe & reason from experience)



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2) Puzzle: The Invisible Force in the Bus

Scenario:

A bus suddenly brakes. Everyone in the bus leans forward.

Using real-life demonstration inside class, show how Newton's first law explains this. Create a 20-second acting scene.

Physics Concept: Inertia **Bloom's Level:** Apply DT Level: Define

3) Puzzle: The Broken Bridge Challenge

Scenario:

A rope bridge sags when a person stands in the middle. But when two people stand at both ends, the sag reduces.

Task:

Using only paper & thread, model the tension distribution and justify why sag changes.

Physics Concept: Tension, force distribution

Bloom's Level: Analyze

DT Level: *Ideate*

4) Puzzle: Escaping the Blackout Room

Scenario:

Lights suddenly turn off during an experiment. You have a mirror, laser pointer toy, and one candle.

Task:

Design a method to guide the light pathway to reach the far corner of the room to signal for

Physics Concept: Reflection **Bloom's Level:** Apply

DT Level: Prototype



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5) Puzzle: The Stuck Suitcase Wheel

Scenario:

You pull your suitcase, and it vibrates and wobbles on a tiled floor.

Task:

Determine what type of resonance or friction issue is happening and demonstrate with a classroom object.

Physics Concept: Resonance, damping

Bloom's Level: Analyze
DT Level: Empathize

6) Puzzle: The Floating Ice Cream Cup

Scenario:

A cup of ice cream floats when placed in a bucket of salty water but sinks in fresh water.

Task:

Create a density-based explanation using only chalk pieces and water glasses.

Physics Concept: Buoyancy Bloom's Level: *Understand*

DT Level: Define

7) Puzzle: Mission: Save the Egg

Scenario:

You must drop an egg from 4 meters without breaking it, using only paper and tape.

Task:

Design a safety structure using physics laws.

Physics Concept: Impulse, momentum, energy absorption

Bloom's Level: Create DT Level: Prototype



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8) Puzzle: The Mystery of Melting Ice Faster

Scenario:

Two ice cubes melt: one placed on metal, one on plastic. The metal melts faster.

Task:

Explain heat transfer using a quick classroom demonstration.

Physics Concept: Thermal conductivity

Bloom's Level: Apply

DT Level: Test

9) Puzzle: The Jammed Door Force Puzzle

Scenario:

A stuck classroom door opens only when pushed at the far edge, not near the hinge.

Task:

Show the difference using rulers and pencils as hinges.

Physics Concept: Torque, moment arm

Bloom's Level: Analyze

DT Level: Ideate

10) Puzzle: The Vanishing Shadow Game

Scenario:

A student notices their shadow disappears at noon during summer.

Task:

Create a simple model with a torch and a stick explaining why shadow becomes minimal.

Physics Concept: Sun angle, illumination

Bloom's Level: Understand

DT Level: Test