



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



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



2) Puzzle: *The Invisible Force in the Bus*

Scenario:

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

Task:

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 help.

Physics Concept: Reflection

Bloom's Level: *Apply*

DT Level: *Prototype*



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*



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*
