



Amazon Egg Drop Delivery

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Unit Overview

Topic:

Physics of Energy

Standards:

- Energy Conservation
- Gravitational Potential Energy
- Design and Conduct Scientific Investigations
- Analyze Models and Explanations

Activity Structure

Title:

Amazon Egg Drop Delivery

Guiding Questions:

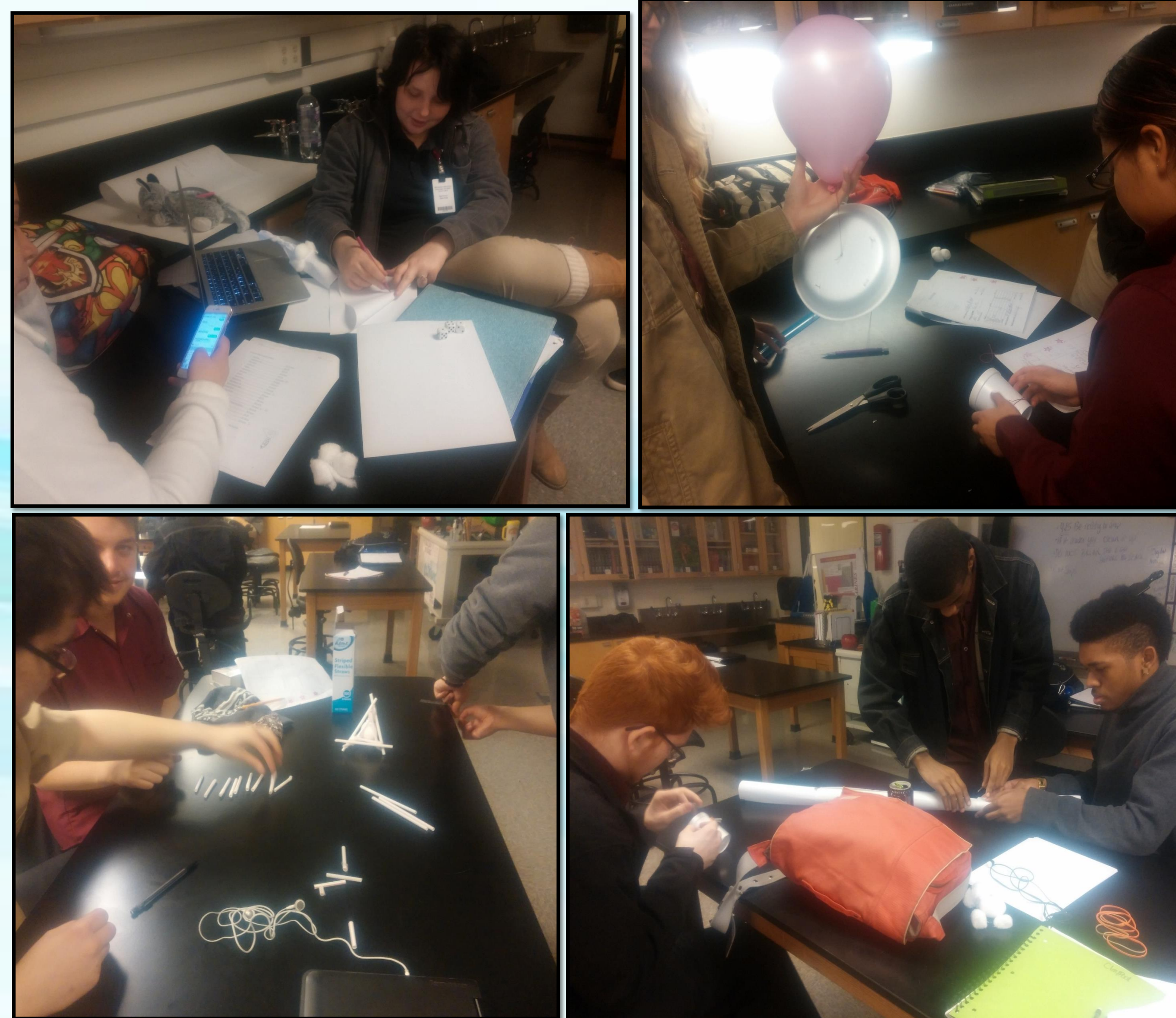
- What is the potential/kinetic energy of an object when released and just before impact?
- When is energy conserved in a system? How is it transformed to reduce impulse force?
- What equations are used to describe the energy transformation as an object falls?

Objectives:

- Utilize the law of energy conservation and conversion to determine impact velocity.
- Describe the forces and energy summation at various points of free-fall.
- Learn to design, critique, build, and test various impulse-bearing structures as a team.

Activity Implementation

- Students must create a device that transports an egg ~25ft downward in “free-fall” without damage to the egg.
- Teams brainstorm various designs and work together to build their prototype using only approved materials.
- Students put their structure to the ultimate drop test.



Engineering Design Process

Application

- Everything requires energy – plants, animals, cars
- Transportation and delivery is a big part of our society

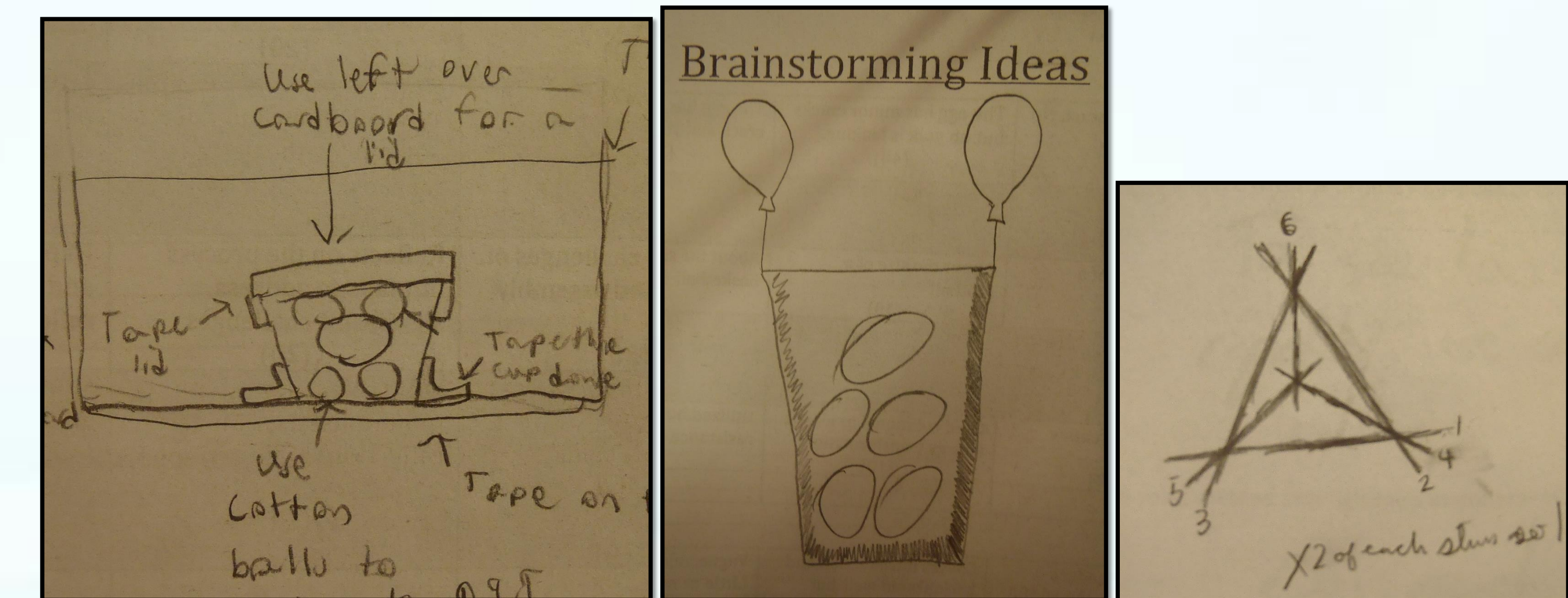
Careers

- Delivery, Aeronautics, Military, Transportation Safety, Healthcare, Analytics, Logistics

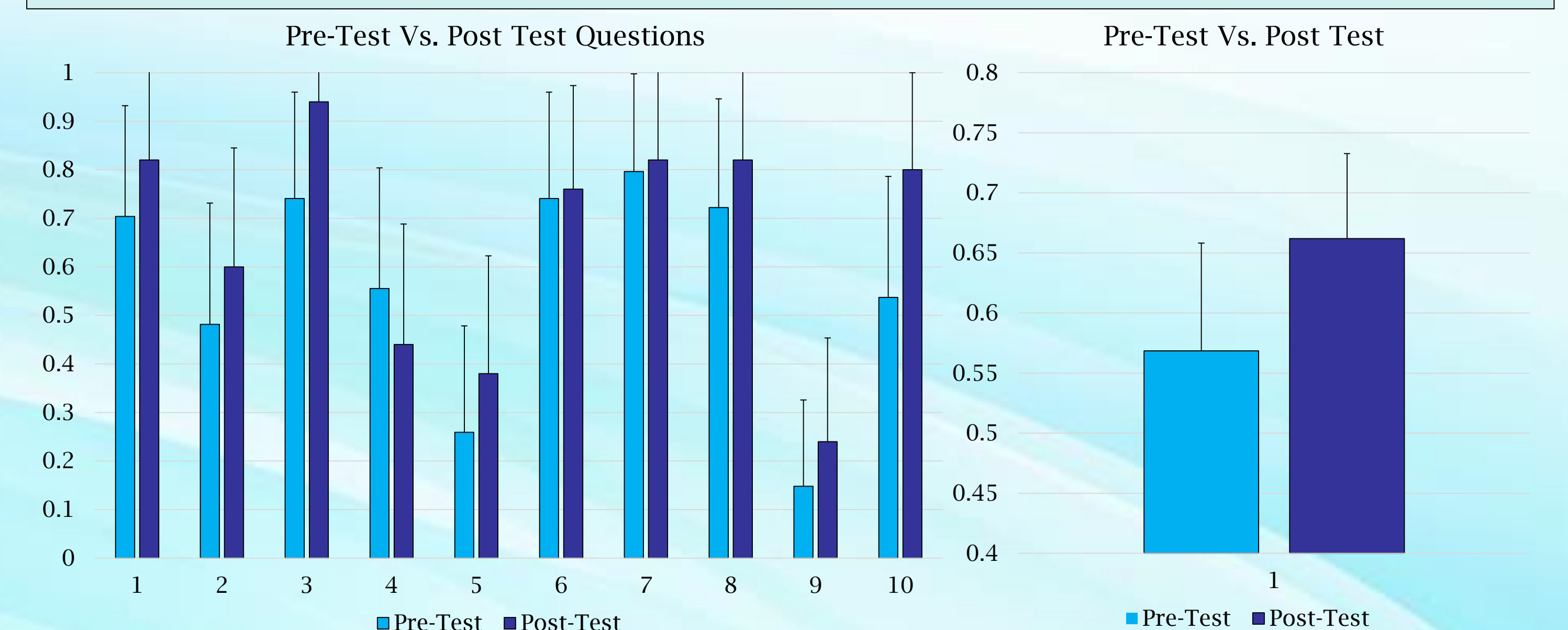
Society

- Small improvement has a HUGE effect
- Better, cheaper, faster – incremental improvement
- Greater global impact

Student Work



Assessment Results: Impact on Student Learning



Reflection and Conclusion

Successes

- Framed in real-world context.
- Challenging Pre/Post test
- Team structure
- Creative problem solving
- Kinesthetic learning
- Documentation and EDP
- FUN!!

Shortcomings

- Broad scope of material
- Not enough time
- Tougher constraints
- More time for discussion
- More example problems
- Confusing equation manipulation