

MAGNETIC LEVITATION *Learning Is on the Rise*



This module meets the following National Standards of Learning

National Science Education Standards: Physical Science

Grades 5–8

Science as Inquiry

- Use appropriate tools and techniques to gather, analyze, and interpret data.
- Use technology and mathematics to improve investigations and communications.
- Think critically and logically to make the relationships between evidence and explanations.
- Formulate and revise scientific explanations and models using logic and evidence.

Grades 9–12

Science as Inquiry

- Design and conduct scientific investigations.
- Use technology and mathematics to improve investigations and communications.
- Formulate and revise scientific explanations and models using logic and evidence.
- Recognize and analyze alternative explanations and models.

Technology Foundation Standards

Basic Operations & Concepts

Students demonstrate a sound understanding of the nature and operation of technology systems.

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

Students employ technology in the development of strategies for solving problems and making informed decisions in the real world.

TRAC PAC 2

Magnetic Levitation (MagLev) may sound like science fiction, but the fact is, this technology is relevant in today's middle school general science classes and high school physics classes.

This module contains five activities to provide a comprehensive overview of basic physics concepts as they apply to moving vehicles.

Activities

Activity 1: Timing Newton's Apple

Activity 1 demonstrates to students that there is some reaction time required to perform an action, no matter how instantaneous the response may seem.

Activity 2: Running the Gauntlet

In Activity 2, students verify Newton's First Law by observing how a maglev car moves with minimal resistance from friction.

Activity 3: Caution—6% Grade Ahead

Activity 3 explores Newton's Second Law and introduces the concept of acceleration due to gravity through observation of how gravity affects vehicles traveling on an inclined surface.

Activity 4: Graphing the Grade

Activity 4 explores Newton's Second Law and introduces the concept of acceleration due to gravity.

Activity 5: Float Like a Butterfly, Sting Like a Bee

In this activity, students will use the skills they have learned to create and race maglev cars.

TRAC™ (TRANsplantation and Civil engineering) is a hands-on education outreach program designed for use in science, math, technology, and social science classes. By engaging students in solving real-world problems, sending volunteer mentors in the classroom, and supplying teachers with the needed materials, TRAC connects K-12 students to the working world of transportation professionals and civil engineers, and inspires them to consider careers in these fields. TRAC PAC 2 is designed for students in middle school and high school. Rides K-8 introduces elementary school students to basic transportation concepts.

Visit WWW.TRACRIDES.TRANSPORTATION.ORG to learn more about the TRAC program.



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