

The Magnetic Levitation Competition

Unit Outline

1. Project Team Members: Robert E. Smith Jr. and David Pinchick
2. Title of Course: Tech. ED., Grade 8
3. Title of Unit or Project: The Magnetic Levitation Competition
4. Approximate length of Unit or Project: Four Weeks
5. Brief description of the Unit or Project with an expected final outcome.

Students will build and operate one or more of four types of model vehicles that use the principle of magnetic levitation. Vehicles will be of individual student design, and will be evaluated via competition.

6. Major Goals of Unit:

Students will learn the principle of magnetic levitation as a use of magnetism. Students will apply previously acquired knowledge of aerodynamics, drag, etc. to a “hands on” applied opportunity to design, develop, construct a vehicle and participate in a competition.

7. Sequence of balanced and integrated activities for students:

Students will:

- a. develop a design idea and submit for instructor approval.
- b. complete draft documents for approved design.
- c. construct vehicle.
- d. participate in competition to evaluate effectiveness of design.

8. Checklist or rubric of assessment components for students.

Class A Vehicles (Distance traveled)

A = Travel 19-20 ft.

B = Travel 15- 18 ft.11 in.

C = Travel 11 – 14ft 11 in.

D = Travel 8 - 10ft. 11 in.

F = Less than 8 ft/failure to complete project

Class B Vehicles (Self-Contained Powered Vehicles)

A = Travel the 20 ft. track in 3.8 sec. or less

B = Travel the 20 ft. track in 3.81 – 4.55 seconds

C = Travel the 20 ft. track in 4.56 - 6.50 seconds

D = Travel the 20 ft. track in 6.5 seconds or more

F = Students who fail to complete project

Class C Vehicles (Electrified track)

A = Travel 20 ft. track in 3.2 sec or less

B = Travel 20 ft. track in 3.21 sec to 4.3 seconds

C = Travel 20 ft. track in 4.31 sec to 6.00 seconds

D = Travel 20 ft. track in 6.01 seconds or over

F = Students who fail to complete the project

Note: Consider adding Rubrics to specify what components must be in the design documents.

9. Specific Standards addressed in this Unit or Project:

<u>Ref. #</u>	<u>Name of Standard</u>	<u>Title of Individual Standard</u>
1.1.8D	PA-RWLS	Identify basic facts and ideas in text
1.1.8E	PA-RWLS	Expand reading vocabulary
1.1.8F	PA-RWLS	Understand and apply key vocabulary
1.2.8A	PA-RWLS	Read and understand essential content
1.5.8A	PA-RWLS	Write with sharp distinct focus
1.5.8B	PA-RWLS	Use well developed content appropriate for topic
1.5.8C	PA-RWLS	Write withorganization
1.5.8D	PA-RWLS	Write with an understanding of the stylistic aspects of composition.
1.5.8E	PA-RWLS	Review writing after rethinking logic.
1.5.8F	PA-RWLS	Edit Writing using conventions.
1.6.8A	PA-RWLS	Listen to others
1.6.8C	PA-RWLS	Speak with skills appropriate for situation.
1.6.8D	PA-RWLS	Contribute to discussion
1.6.8E	PA-RWLS	Participate in small/large group discussions.
1.8.8A	PA-RWLS	Select and refine a topic for research.
1.8.8B	PA-RWLS	Locate information using appropriate sources.
1.8.8C	PA-RWLS	Organize, summarize and present main research ideas.