



WEST SHORE SCHOOL DISTRICT
Transportation Learning Module

Title of Module	6 th grade Transportation	Grade Level	6
Curriculum Area	Technology Education	Time Frame	1 week

Desired Results

Science and Engineering Practices	Crosscutting Practices
<ol style="list-style-type: none"> 1. Asking questions and defining problems. 2. Developing and using models. 3. Planning and carrying out investigations. 4. Analyzing and interpreting data. 5. Using mathematics and computational thinking. 6. Constructing explanations and designing solutions. 7. Engaging in argument from evidence. 8. Obtaining, evaluating and communicating information. 	<ol style="list-style-type: none"> 1. Patterns 2. Cause and effect 3. Scale, proportion, and quantity 4. Systems and system models 5. Measurement 6. Math shifts

Transfer Goals

- Understand proper use of tools and safety
- Identify different engineering and design processes, strategies, and proper application
- Understand proper measuring units
- Understand scale and proportion
- Understand forces of transportation

Key Learnings/Big Ideas

- Design and engineering
- Safe operation of tools and equipment
- Principals of magnetism
- Listen critically and respond to others in small and large group situations.
- Work with tools, materials, and technological concepts and processes.

Content and Reading and Writing Standards

Indicate eligible content standards by highlighting.

Include PA Core Reading and Writing for Science, Technical Subjects, Mathematics.

3.4.6.B4. Demonstrate how new technologies are developed based on people’s needs, wants, values, and/ or interests.

3.4.6.C2. Show how models are used to communicate and test design ideas and processes.

3.2.6.B1. Explain how changes in motion require a force.

3.4.6.B1. Describe how economic, political, and cultural issues are influenced by the development and use of **technology**.

3.2.6.B4. Describe how electric current produces magnetic forces and how moving magnets

produce electric current.

Essential Questions	Vocabulary (Best Practices) Utilize concepts & competencies to add to vocabulary
Unit EQ: <ul style="list-style-type: none"> • What design considerations go into making a mag lev vehicle? • What design considerations are beneficial to making a mag lev vehicle? 	Vocabulary: Magnetism Styrofoam Aerodynamics Multi-View Drawings Mass Force Design
Concepts Students will know...	Skills/Competencies (I Can...) Based on LEQs Students will be able to...
<ul style="list-style-type: none"> • The characteristics of magnetism • The importance of collaboration in reaching a goal • The methods necessary in making a maglev vehicle. • Drag/Aerodynamics 	<ul style="list-style-type: none"> • How to design a maglev vehicle. • How to collaborate with other students. • Using appropriate materials/equipment in a safe manner.

Assessment Evidence

Formative Assessment

- Incorporate technology to test a potential design.
- Evaluate and modify design process for proper performance and operation.

Summative Assessment

- Grade design using rubric
- Grade project using rubric

Best Instructional Practices

- Subject Specific Best Practices (example: Science Processes)
 - Extended Thinking
 - Summarizing
 - Vocabulary in Context
 - Advance Organizers
 - Non-verbal Representation
 - Integration of Webb's Depth (examples)
 - Integration of 21st Century Skills (examples)
 - Reading and writing across disciplines (examples)
- Differentiated options (examples)

21 Century Skills/ STEM		
Learning and Innovation Skills	Information, Media, and Technology Skills	Life and Career Skills
Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration	Information Literacy Media Literacy ICT (Information, Communications and Technology) Literacy	Flexibility and Adaptability Initiative and Self -Direction Productivity and Accountability Leadership and Responsibility
Extended Thinking Summarizing Vocabulary in Context Advance Organizers Non-verbal Representation Integration of Webb's Depth (examples) Integration of 21 st Century Skills (examples) Reading and writing across disciplines (examples) Differentiated options (examples)		

Resources

Student	Teacher
<ul style="list-style-type: none"> • The Ruler Game http://www.rulergame.net • Teachers' websites • Bridge building and testing websites <ul style="list-style-type: none"> • Allen Middle School—Mr. Griffith http://www.wssd.k12.pa.us/webpages/MGriffith/ • New Cumberland Middle School – Andre Faranov http://www.wssd.k12.pa.us/webpages/AFaranov/links.cfm • Crossroads Middle School - Mr.Papieredin http://www.wssd.k12.pa.us/webpages/MPapieredin/ 	<ul style="list-style-type: none"> • Andre Faranov • Matthew Griffith • Michael Papieredin

Adapted from Wiggins, Grant and J. Mc Tighe. (1998). Understanding by Design, Association for Supervision and Curriculum Development, ISBN # 0-87120-313-8 (ppk)