Project Lead The Way	Curriculum Map	Grade: 6

	CURRICULUM *End Product of Learning, "What" You Teach*			***INSTRUCTION*** *Means to the End Product, "How" You Teach*	***ASSESSMENT*** *Validation to Revise Curriculum & Instruction*
TIME FRAME [By Date/Week/ Month]	**STANDARD OR BENCHMARK**	**CONTENT: What we want students to "KNOW".**	**SKILL: What we want students to "DO".**	**Varied Teaching/Learning Strategies Resources/Comments**	**Varied Classroom Assessment Strategies**
6 weeks	**Lesson 1** **Investigating Energy** Standard 4: Students will develop an understanding of the cultural, social, economic and political effects of technology. BM D: The use of technology affects humans in various ways, including their safety, comfort, choices, and attitudes about technology's development and use. BM E: Technology, by itself, is neither good nor bad, but decisions about the use of products and systems can result in desirable or undesirable consequences. BM F: The development and use of technology poses ethical issues. BM G: Economic, political and cultural issues are influenced by the development and use of technology. Standard 5: Students will develop an understanding of the effects of technology on the environment.	. It is expected that each student will: - differentiate between potential and kinetic energy - explain the differences, advantages, and disadvantages between exhaustible, inexhaustible, renewable, and nonrenewable energy sources - understand global energy use and trends toward future demands - understand the value of energy and ways they could increase efficiency of energy at home and at school - calculate financial savings and explain the effects of our carbon footprint as the result of efficient energy use - design, model, and test a wind turbine for efficiency	It is expected that students will: - explain the difference between potential and kinetic energy in real world situations - give real world examples of the differences, advantages, and disadvantages between exhaustible, inexhaustible, renewable, and nonrenewable energy sources - discuss how global energy use trends with future demands - show detailed examples of the value of energy and ways you can increase efficiency of energy at home and at school - show actual financial saving and discuss how this effects their carbon footprint - build a wind turbine for efficiency	Laptop computers w/ internet access Wind with Miller website Energy Crossroads video PLTW powerpoints Smartboard Technology Y-tube Engineering Careers Wind Turbine buliding materials and constraints Project Lead the Way Curriculum	In class assignments Projects Effort and Participation

	BM D: The management of waste produced by technological systems is an important societal issue. BM E: Technologies can be used to repair damage caused by natural disasters or to break down waste from the use of various products and systems. BM G: Humans can devise technologies to conserve water, soil, and energy through such techniques as reusing, reducing and recycling. BM H: When new technologies are developed to reduced the use of resources, considerations of trade offs are important. BM J: The alignment of technological processes with natural processes maximizes performance and reduces negative impacts on the environment. Standard 6: Students will develop an understanding of the role of society in the development and use of technology. BM D: Throughout history, new technologies have resulted from the demands, values, and interests of individuals, businesses and societies. BM E: The use of inventions and innovations has led to changes in society and the creation of new needs and				

	wants. Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies. BM I: Much of the energy used in our environment is not used efficiently. BM J: Energy cannot be created or destroyed; it can be converted from one form to another. BM K: Energy can be grouped into major forms: thermal, radiant, electrical, mechanical, chemical, nuclear and others. BM M: Energy resources can be renewable or nonrenewable.				
6 weeks	**Lesson 2** **Sustaining Energy** Standard 4: Students will develop an understanding of the cultural, social, economic, and political effects of technology. BM D: The use of technology affects humans in various ways, including their safety, comfort, choices, and attitudes about technology's development and use. BM G: Economic, political and cultural issues are influenced by the development and use	It is expected that students will: - create graphs to represent data to support our energy consumption, energy imports, and energy production - identify alternative forms of energy, explain why they are alternative, and identify the advantages and disadvantages of each - identify challenges in transferring alternative energies from where they are produced to where they are consumed - recognize that the solution to our energy needs now and in the future	It is expected that students will: - draw and explain graphs of real energy consumption and production to support or not support its use - research and present an alternative form of energy, explain why it is alternative, and identify the advantages and disadvantages - explain how your alternative form of energy can be transferred from where it is produced to where it is needed - present the solution to show how your new energy would	Project Lead the Way Curriculum Project Lead the Way power points Y-tube Nova Smartboard Technology Laptop Computers w/ internet access	In class assignments Projects Effort and Participation

	of technology. Standard 5: Refer to Lesson 1 above. Standard 7: Students will develop an understanding of the influence of technology on history. BM C: Many inventions and innovations have evolved by using slow and methodical processes of tests and refinements. BM I: Throughout history, technology has been a powerful force in reshaping the social, cultural, political and economic landscape. BM J: Early in the history of technology, the development of many tools and machines was based not on scientific knowledge but on technological know-how. BM N: The industrial revolution saw the development of continuous manufacturing, sophisticated transportation, advanced construction practices, and improved education and leisure time. Standard 15: Students will develop an understanding of and be able to select and use agricultural and related biotechnologies. BM G: A wide range of specialized equipment and practices is used to improve the production of food, fiber,	will include conversation and the wise use of resources as well as a variety of sources - research an alternative energy solution that will reduce the nations dependency on fossil fuels used for a specific purpose	include conservation and wise use of any resources - explain how your energy source will reduce the nations dependency on fossil fuels		

	fuel, and other useful products and in the care of animals. Standard 16: See Standard 16 in Lesson 1 above.				
6 weeks	**Lesson 3** **Making an Impact** Standard 1: Students will develop an understanding of the characteristics and scope of technology. BM F: New products and systems can be developed to solve problems or to help do things that could not be done without the help of technology. Standard 2: Students will develop an understanding of the core concepts of technology. BM R: Tradeoff is a decision process recognizing the need for careful compromises among competing factors. BM T: Different technologies involve different sets of processes. Standard 6: See Standard 6 in Lesson 1 above. Standard 9: Students will develop an understanding of engineering design. BM F: Design involves a set of steps, which can be performed in	It is expected that students will: - determine how much water is used daily in their home and identify ways their family could conserve water - identify ways that the individual can reduce the effect on the environment through their energy sources and garbage disposal - identify how engineers are involved with waste management - understand the difference between energy conservation and energy efficiency and be able to identify measures for both - differentiate between conduction, convection, and radiation as forms of energy transfer - engineer, with team members, a dwelling that minimizes heat transfer and prevents an ice cube from melting - evaluate the effectiveness of a device that is designed to reduce heat transfer, make improvements to the model that raise effectiveness	It is expected that students will: - conduct an water audit at their home and identify ways that their family might conserve water - discuss how individuals can reduce the effect of the environment through their conservation sources and garbage disposal - discuss how engineers are involved in waste management - give examples of how energy conservation and energy efficiency can be measured - Research and explain the difference between conduction, convection, and radiation - construct a dwelling given a set of constraints that minimizes heat transfer to prevent an ice cube from melting - test your dwelling using the tools avaliable to evaluate its effectiveness and make improvements	Project Lead the Way curriculum Water audit, heat transfer Information sheets Decision and Design Matrix Laptop computers w/ internet access PLTW powerpoints Smartboard Technology Y-tube secret life of garbage Penguin dwelling Insulation supplies	In class assignments Projects Effort and Participation

	different sequences and repeated as needed. BM G: Brainstorming is a group problem-solving design process in which each person in the group presents his or her ideas in an open forum. BM H: Modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions. Standard 13: Students will develop the abilities to access the impacts of products and systems. BM F: Design and use instruments to gather data. BM G: Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology. BM H: Identify trends and monitor potential consequences of technological development.				
4 weeks	**Lesson 4** **What is engineering?** Standard 1 : Student will develop an understanding of the characteristics and scope of technology. BM F: New products and systems can be developed to solve problems or help do things that could not be done without the help of technology	It is expected that students will: - assemble an engineering notebook - Explain the relationship between science, technology, engineering and mathematics - Distinguish between invention and innovation - Describe engineering and explain	It is expected that students will: - use their engineering notebooks for notes and sketches - discuss the relationship between science, technology, engineering, and mathematics in real world settings - discuss invention and	Project Lead the Way curriculum Decision and Design Matrix Laptops computers w/ internet access Engineers Can Do Anything video PLTW powerpoints Smartboard Technology	In class assignments Projects Effort and Participation

	BM G: The development of technology is a human activity and is the result of individual or corporate needs and the ability to be creative BM H: Technology is closely linked to creativity, which has resulted in innovation BM L: Inventions and innovations are the result of specific, goal directed research Standard 3: Students will develop an understanding of the relationships among technologies and the connection between technology and other fields of study. BM D: Technology systems interact with one another BM F: Knowledge gained from other fields of study has a direct effect on the development of technological products and systems BM H: Technological innovation often results when ideas, knowledge, or skills are shared within a technology, among technologies, or across other field Standard 6: Students will develop an understanding of the role of society in development and use of technology BM D: Throughout history, new technologies have resulted from the demands, values, and interests of individuals, businesses, industries, and societies BM E: The use of inventions and innovations have led to	how engineers participate in or contribute to the invention and innovation of products - Describe impacts that technology has had on society	innovation in real world settings - tell how engineers participate in the processes of invention and innovation in real world products - describe how technology has impacted our world	Y-tube Did you know	

	changes in society and the creation of wants and needs				
3 weeks	**Lesson 5** **Measurement** Standard 6 See lesson 4 above Standard 7 See lesson 2 above Standard 13 See lesson 3 above	It is expected that students will: - demonstrate the ability to measure accurately with different devices and scales - explain how to measure in different contexts - measure in both standard and metric	It is expected that students will: - show why it is important to measure accurately in real world situations - decide to construct their skimmer in standard or metric units and reflect om their accuracy in relation to performance	Project Lead the Way curriculum Laptops computers w/ internet access PLTW powerpoints Smartboard Technology File Folders Measuring devices & scissors	In class assignments Projects Effort and Participation
8 to 10 weeks	**Lesson 6** **Inventor** Standard 8: Students will develop an understanding of the attributes of design. BM G: Requirements for a design are made up of criteria and constraints. BM I: Design problems are seldom presented in a clearly defined form. Standard 9: Students will develop an understanding of engineering design. BM F: Design involves a set of steps, which can be performed in different sequences and repeated as needed. Standard 10: Students will develop an understanding of the role of troubleshooting, research and	It is expected that students will: -draw basic shapes using technology -create 3-dimensional objects from 2-dimensional shapes -combine more than one 3-dimensional object create a different object -construct objects with specific dimensions -how to combine simple figures together -how to extend simple to more complex figures and designs	It is expected that students will: - use basic shapes with technology - use shapes to create objects - use more than one shape to create a different object - use specific dimensional to construct an exact shape or object -use technology to fit simple parts together - use technology to extend complexity of simple parts to more challenging designs	Engineering notebooks Laptops computers w/ internet access and inventor program PLTW powerpoints Smartboard Project Lead the Way curriculum Technology	In class assignments Projects Effort and Participation

	development, invention and innovation, and experimentation in problem solving. BM F: Troubleshooting is a problem-solving method used to identify the cause of a malfunction in a technological system. Standard 11: Students will develop abilities to apply the design process. BM K: Test and evaluate the design in relation to pre-established requirements such as criteria and constraints, and refine as needed.				