FOUNDATIONS OF TECHNOLOGY

Description:	Foundations of Technology prepare students to understand and apply technological concepts and processes that are the cornerstone for the high school technology program. Group and individual activities engage students in crating ideas, developing innovations, and engineering practical solutions. Technology content, resources, and laboratory/class-room activities apply student applications to science, mathematics and other school subjects in authentic situations. This course will focus on the three dimensions of technological literacy: knowledge, ways of thinking and acting, and capabilities, with the goal of students developing the characteristics of technologically literate citizens. It will employ teaching/learning strategies that enable students to build their own understanding of new ideas. It is designed to engage students in exploring and deepening their understanding of engineering. And makes use of a variety of assessment instruments to reveal the extent of understanding. This course is one component of the overall technology engineering education program designed to prepare students for the technological world by preparing them to assume the roles of informed voters, productive, workers, and wise consumers. The course will focus on the development of knowledge and skills regarding the following aspects of technology: 1) its evolution, 2) systems, 3) core concepts, 4) design, and 5) utilization. This course is a transition high school level learning experience that builds on student understanding gained in middle school courses. It capitalizes on the maturing adolescent's ability to understand technological concepts and analyze issues regarding the application of technology. The course will prepare students understand the design world, engineering design, attributes of design and the core concepts of technology. This course continues integrating STEM in problem-solving, project-based learning, and engineering design helping all students develop a better understanding of information and communication, construction, manufacturing, and power and energy technologies.
Pre-requisites	NA
Recommended Credits:	Currently enrolled in Algebra 1
Recommended Grade Levels:	9 - 12

FOUNDATIONS OF TECHNOLOGY

Standard 1.0
Demonstrate leadership, citizenship, and teamwork skills required for success in the school, community and workplace through Technology Student Association.

Standard 2.0
Safely use tools, materials, equipment and other technology resources.

Standard .3.0
Develop a knowledge and understanding of the history of technology.

Standard 4.0
Develop an understanding of the relationships among technologies and the connections with other fields of study.

Standard 5.0
Apply the Design Process

Standard 6.0
Develop an understanding of and be able to select and use Manufacturing Technologies

Standard .7.0
Develop an understanding of and be able to select and use Construction Technologies.

Standard 8.0
Develop an understanding of and be able to select and use Power and Energy Technologies.

Standard 9.0
Develop an understanding of and be able to select and use information and communications technologies.

Standard 10.0
Develop a knowledge and understanding of Systems Thinking

FOUNDATIONS OF TECHNOLOGY

STANDARD 1.0

Demonstrate leadership, citizenship, and teamwork skills required for success in the school, community and workplace through Technology Student Association.

LEARNING EXPECTATIONS

The student will be able to:

1.1 Exhibit positive leadership skills.
1.2 Participate in the Technology Student Association (TSA) as an integral part of classroom instruction.
1.3 Demonstrate the ability to work cooperatively with others in a professional setting.
1.4 Outline leadership skills and team building.
1.5 Identify personal, teamwork and leadership skills used in various occupations.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student should know and be able to:

1.1.1 Conduct a self-study of personal leadership and teamwork styles.
1.1.2 Identify and utilize the strengths of individuals to solve a problem as a team.
1.2.1 Explain the importance of the principles expressed in the TSA Motto and Creed.
1.2.2 Prepare a meeting agenda for a TSA monthly/weekly meeting.
1.3.1 Participate in and conduct meetings according to accepted rules of parliamentary procedure.
1.4.1 Participate in various TSA activities and/or competitive events.
1.5.1 Work with a team to develop, implement and evaluate the effectiveness of a community or school service project

SAMPLE PERFORMANCE TASKS

- Create a leadership inventory and use it to conduct a personal assessment.
- Participate in various TSA programs and/or competitive events.
- Evaluate an activity within the school, community, and/or workplace and project effects of the project.
- Implement an annual program of work.
- Prepare a meeting agenda for a TSA monthly/weekly meeting.
- Attend a professional organization meeting.
- Participate in a leadership conference for TSA.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.

FOUNDATIONS OF TECHNOLOGY

STANDARD 2.0
Safely use tools, materials, equipment and other technology resources.

LEARNING EXPECTATIONS

The student will be able to:
2.1 Successfully pass a test on general classroom, lab, and/or shop safety guidelines with 100% accuracy.
2.2 Successfully pass a test on the safe use of tools and equipment used in the lab and/or shop with 100% accuracy.
2.3 Successfully pass a test on the safety hazards that exist at home, school and in the workplace.
2.4 Using research relating to OSHA regulations conduct a safety inspection for a lab, school, or business.
2.5 List and explain the importance of safety guidelines for TSA competitive events.
2.6 Understand general laboratory safety rules and regulations when using tools, equipment and performing processes.
2.7 Understand safety, nomenclature and usage of all hand tools used in this course.
2.8 Understand and explain potential safety, chemical, electrical and fire safety hazards that exist in a Technology Engineering classroom and their school.
2.9 List all safety rules required when competing in specific TSA competitive events.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student should know and be able to:
2.1.1 Successfully pass a test on general classroom, lab, and/or shop safety guidelines with 100% accuracy.
2.2.1 Successfully pass a test on the safe use of tools and equipment used in the lab and/or shop with 100% accuracy.
2.3.1 Successfully pass a test on the safety hazards that exist at home, school and in the workplace.
2.4.1 Using research relating to OSHA regulations, conduct a safety inspection for a lab, school, or business.
2.5.1 List and explain the importance of safety guidelines for TSA competitive events.
2.6.1 Understand general laboratory safety rules and regulations when using tools, equipment and performing processes.
2.7.1 Understand safety, nomenclature and usage of all hand tools used in this course.
2.8.1 Understand and explain potential safety, chemical, electrical and fire safety hazards that exist in a Technology Engineering classroom and their school.
2.9.1 List all safety rules required when competing in specific TSA competitive events.

SAMPLE PERFORMANCE TASKS:

- Students successfully pass a written or oral test on fire safety.
- Students successfully pass a written test on all hand tools to be used in the laboratory.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.

FOUNDATIONS OF TECHNOLOGY

STANDARD 3.0
Develop a knowledge and understanding of the history of technology.

LEARNING EXPECTATIONS

The student will be able to:

3.1 Identify the periods of human history associated with the evolution of technology and explore how people of all times and all places have increased their capability by innovating, improvising, and inventing.
3.2 Identify the way technology has influenced history by comparing and contrasting life in different periods of technological development.
3.3 Analyze the historical significance of technological advancement and gain an understanding of the influence of technology on history.
3.4 Research the history and current practice, policies and procedures of an engineering career field.
3.5 Identify an emerging technology and report on its potential influence on history.
3.6 Examine, categorize, and interpret the influence technology has had on history.
3.7 Develop abilities to assess the impacts of products and systems.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

At the completion of this unit, students will:
3.1.1 Develop and record information regarding the influence of a technological advancement.
3.2.1 Compare and contrast inventions or innovations based on how they evolved.
3.2.2 Develop and record information regarding the influence of the technological advancement on history.
3.3.1 Access, retrieve, organize, and evaluate data and information in order to communicate.
3.4.1 Use mathematical modeling techniques for making predictions about the future applications of an emerging technology.
3.5.1 Conduct self-assessment of work performance based on rubric and student check list.
3.5.2 Explain mathematical functions (linear, quadratic, or exponential) and how they may represent an aspect of technological change.

SAMPLE PERFORMANCE TASKS:

- Working in small groups, students will brainstorm a selected technological advancement (the plow, an irrigation system, cannon, printing press, steam engine, radar, computer, etc.). The student groups will develop and record information regarding the influence of the technological advancement on history. (Example: The invention of the printing press in the mid-fifteenth century made books more widely available and increased literacy rates.)
- Working in small groups, may be asked to identify an emerging technology and report on its potential influence on history.
- Students may be assigned to visit a museum in person or online and report on how the influence of technology on history is presented.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.

FOUNDATIONS OF TECHNOLOGY

STANDARD 4.0

Develop an understanding of the relationships among technologies and the connections with other fields of study.

LEARNING EXPECTATIONS

The student will be able to:

4.1 Understand and explain that interrelationships exist among technologies and between technologies and other fields of study.

4.2 Define the way technological progress promotes the advancement of science and mathematics, the different traditions in science about what is investigated and how and the resulting impacts on society.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student should know and be able to:

4.1.1 Describe the strong relationship between technology and the study of science.
4.1.2 Identify attributes of science experts.
4.1.3 Describe the role of patents as they relate to technological ideas.
4.1.4 Relate technological processes to the advancement of science and mathematics.
4.2.1 Define terms related to technology and science.
4.2.2 Explain how technology transfer occurs when a new user applies an existing innovation developed for one purpose to a different function.
4.2.3 Recognize and apply mathematics in contexts outside of mathematics.
4.2.4 Compare and contrast the interest of technology and science in natural scientific laws, systems, design, and modeling.
4.2.5 Conduct effective and focused research.
4.2.6 Present research findings using instructional technology.

SAMPLE PERFORMANCE TASKS:

- Unit 2, Lesson 3 – Vignette 1 – The Discovery of the New Planet Neptune, Pg. 89.
- Unit 2, Lesson 3 - Vignette 2 – Gravitational Perturbations and the prediction of new planets, Pg. 90.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.

FOUNDATIONS OF TECHNOLOGY

STANDARD 5.0
Apply the Engineering Design Process

LEARNING EXPECTATIONS

The student will be able to:

5.1 Identify resources, steps in the design process, and the constraints within the engineering design process.
5.2 Understand and apply the engineering design process by transforming an idea into a final product or system.
5.3 Identify and describe the core technologies (mechanical, structural, electrical, electronic, thermal, fluid, optical, bio, and material) as they are applied in the design world.
5.4 Analyze how mechanical systems in terms of common components, basic system design, safety considerations and simple controls.
5.5 Analyze how electrical systems in terms of common components, basic system design, safety considerations and simple controls.
5.6 Apply the concepts of reverse engineering with the intention to construct a new device or program that does the same thing without actually copying from the original.
5.7 Examine and analyze open and closed fluid systems in terms of common components and basic system design.
5.8 Explain the function and application of thermal technology systems.
5.9 Analyze how optical systems function in terms of common components, basic system design, safety considerations, and simple controls.
5.10 Understand the connection between materials science and engineering materials.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student should know and be able to:

5.1.1 Apply the design process to solve a problem.
5.1.2 Conduct and report on effective and focused research.
5.1.3 Explain that the design process is a systematic approach to problem solving that yields design solutions.
5.1.4 Explain why designs need to be continually critiqued and refined.
5.1.5 Identify and describe the constraints on engineering design process.
5.2.1 Explain why the design process in never considered to be final.
5.2.2 Make two-dimensional and three-dimensional representations of a design solution.
5.2.3 Demonstrate proper layout of orthographic projection, working drawings, and detail drawing.
5.2.4 Demonstrate drawing ability of isometric and oblique sketching.
5.2.5 Recognize and use descriptive geometry in solving engineering design problems.
5.2.6 Fabricate a prototype or model of a design solution.
5.2.7 Evaluate a prototype in terms of design requirements and constraints.
5.3.1 Identify and describe the core technologies (mechanical, structural, electrical, electronic, thermal, fluid, optical, bio, and material) as they are applied in the design world.
5.3.2 Apple mathematics and science sills and concepts to the analysis of engineering resources.
5.3.3 Organize and present data effectively.
5.4.1 Explain how mechanical systems enhance human capabilities.
5.4.2 Describe factors that affect a mechanical system's efficiency.
5.5.1 Explain how electrical systems enhance human capabilities.
5.5.2 Describe factors that affect an electrical system's efficiency.
5.6.1 Explain the reverse engineering process and reverse engineer a product.
5.6.2 Follow step by step directions to assemble and disassemble a product.
5.7.1 Differentiate between hydraulic and pneumatic systems and provide examples of appropriate applications of each.
5.7.2 Explain the relationship between velocity and cross-sectional area in the movement of a fluid.
5.7.3 Describe several examples of the effect of gravity on a fluid technology system.
5.8.1 Define terms related to thermal technology.

FOUNDATIONS OF TECHNOLOGY

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student should know and be able to:

5.8.2 Explain the difference between heat and thermal energy.
5.8.3 Describe the heat transfer processes of conduction, convection, and radiation.
5.9.1 Define terms related to optical technology
5.9.2 Demonstrate three methods of controlling light.
5.10.1 Analyze the development and impact of some common materials.
5.10.2 Test the elastic and plastic properties of metals.

PERFORMANCE TASKS:

- "Can You Top This!" - Students will Design and construct a top that will spin for the longest time. Activity is found on pages 119 - 121, Unit 3 – Lesson 2.
- Build a Catapult or a Trebuchet.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.

FOUNDATIONS OF TECHNOLOGY

STANDARD .6.0
Develop an understanding of and be able to select and use Manufacturing Technologies

LEARNING EXPECTATIONS

The student will be able to:
6.1 Understand the function and organization of manufacturing enterprises.
6.2 Describe how Computer-Integrated-Manufacturing (CIM) is changing the manufacturing technologies.
6.3 Identify the major mechanical, thermal, chemical and electrochemical processes used in producing industrial materials.
6.4 Understand that manufacturing is a production system that uses technological resources to transform ideas into products.
6.5 Research what is new in manufacturing.
6.6 Understand how products are manufactured.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student should know and be able to:
6.1.1 Analyze manufacturing processes including designing, developing, producing and servicing.
6.1.2 Describe mechanical processes that change the form of materials including separating, forming, combining, and conditioning.
6.1.3 Identify the major areas of manufacturing and leading enterprises from each manufacturing segment.
6.1.4 Describe how manufacturing systems capture, develop, produce, and market creative ideas.
6.1.4 Research, design and fabricate a display depicting a primary manufacturing process.
6.2.1 Identify and describe the common attributes of integrated automated process technologies.
6.2.2 Identify and describe the role computers play in the integrated automated process technologies.
6.2.3 Create a concept map that analyzes integrated automated process technologies.
6.3.1 Classify industrial materials based on how they were made.
6.3.2 Identify and describe industrial materials made using mechanical process.
6.3.3 Research, design and fabricate a display depicting a primary manufacturing process.
6.3.4 Identify durable and non durable goods.
6.3.5 Conduct research market research on a product's identity, conducting research on its potential, advertising it, distributing it and selling it.

PERFORMANCE TASKS:

- Students will work in groups of two and manufacture a trebuchet
- Student working in groups will conduct research and identify common attributes of integrated automated process technologies and will present their concept maps to the class.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.

FOUNDATIONS OF TECHNOLOGY

STANDARD 7.0
Develop an understanding of and be able to select and use Construction Technologies

LEARNING EXPECTATIONS

The student will be able to:
7.1 Understand construction technology and how cultural norms, environmental conditions, and the requirements of enterprises might affect the design of structures.
7.2 Understand bridge design and construction, including the forces acting on structures.
7.3 Describe the functions, applications and the requirements of construction management.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student should know and be able to:
7.1.1 Identify and describe heavy engineering structures.
7.1.2 Identify and describe types of building.
7.1.3 Explain how cultural norms, environmental conditions, and the requirements of enterprises might affect the design of structures.
7.1.4 Describe the role transportation plays in the operation of construction enterprises.
7.1.5 Describe the major processes and procedures used to create buildings.
7.1.6 Calculate the efficiency of a structure.
7.2.1 Identify and describe the forces that act on very large bridges.
7.2.2 Explain how truss bridges counteract the forces acting on structures.
7.2.3 Describe the three major types of bridges.
7.2.4 Create a structural model, tests a design, and optimizes a design.
7.3.1 Describe the task that a construction manager must be able to perform.
7.3.2 Develop a flowchart for a construction project.
7.3.3 Create a Gantt Chart.
7.3.4 Describe the training required to become a contractor.
7.3.5 Analyze the steps in the construction process.
7.3.6 Research careers in construction management.

PERFORMANCE TASKS:

- Students will Design and build a structure that meets the TSA structural engineering challenge.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.

FOUNDATIONS OF TECHNOLOGY

STANDARD 8.0
Develop an understanding of and be able to select and use Energy and Power Technologies

LEARNING EXPECTATIONS

The student will be able to:
8.1 Understand and describe the nature of energy and power technologies.
8.2 Explain the production, conversion, transmission and application of different forms of energy.
8.3 Effectively explain how energy cannot be created nor destroyed.
8.4 Systematically analyze and diagram power systems.
8.5 Explain how energy production and consumption can impact society, productivity, and the environment.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student should know and be able to:
8.1.1 Define and differentiate energy, power, instrumentation, and control.
8.1.2 Differentiate between kinetic and potential energy.
8.1.3 Identify and describe the major sources of energy.
8.2.1 Describe energy conversion processes using a systems model.
8.2.2 Describe how alternative forms of energy may be used in the future.
8.2.3 Explain how engines covert energy into mechanical force and motion.
8.3.1 Explain that energy cannot be created nor destroyed; however it can be converted from one form to another.
8.4.1 Describe how power is transmitted.
8.4.2 Analyze power systems identifying the source of energy, the process, and the load.
8.5.1 Research the great energy debate
8.5.2 Develop a list of activities that are dependent upon fossil fuels.

PERFORMANCE TASKS:

- Students will pretend they live in the 3000. Their group is a team of archeologist who will follow the guidelines fond on the top of page 294, Unit 6, Lesson 2 and they will answer question 3.
- Students in groups of two will use the Internet, the library, and any other relevant resources they can find to answer the questions 1-3 found in the Extension on page 295, Unit 6, Lesson 2.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.

FOUNDATIONS OF TECHNOLOGY

STANDARD 9.0
Develop an understanding of and be able to select and use information and communications technologies.

LEARNING EXPECTATIONS

The student will be able to:
9.1 Understand the nature of information and communication technologies.
9.2 Investigate the major types of communication systems.
9.3 Identify the functioning and applications of communication systems.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student should know and be able to:
9.1.1 Analyze information and communication technologies include inputs, process, and outputs associated with sending and receiving information.
9.1.2 Design and fabricate an information and communication product.
9.1.3 Compare and contrast information and communication systems designed to inform, persuade, entertain, control, manage, and educate.
9.2.1 Identify and describe the components of a communication system.
9.2.2 Explain why messages are influenced by factors such as timing, sequencing, and processing.
9.2.3 Explain how relevancy, timelines, and cultural values influence the effectiveness and usefulness of information.
9.2.4 Explain the functioning and applications of the major types of printing processes.
9.2.3 Define and describe the major types of technical graphic communication.
9.3.1 Describe the functioning and applications of the global positing system.
9.3.2 Describe navigation technologies used today.
9.3.3 Explain in detail how technological knowledge and processes are communicated.
9.3.4 Define photographic communications and identify samples of photographic products.

SAMPLE PERFORMANCE TASKS:

- Exploration - Unit 7, Lesson 1 – Pgs. 315, 1-2, .Students working in pairs will classify communication technology using the chart. They will share their lists in Explanation 1-3.
- Students will research an aspect of competitive economic growth (personal services, hospitality, finance, recreation, agriculture, health and medicine, and create a graphic organizer that describes how information and communication technologies are employed to enhance the enterprise. Extension – Unit 7, Lesson 1, Pg. 316.
- Exploration 1-3, Unit 7, Lesson 3, Pg. 332. Students will research and make a brief report on navigation technology used in the Age of Exploration.
- Students will design and fabricate a cell phone case that will be manufactured.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.

FOUNDATIONS OF TECHNOLOGY

STANDARD 10.0
Develop a knowledge and understanding of Systems Thinking

LEARNING EXPECTATIONS

The student will be able to:
10.1 Explain how systems thinking are used to apply logic and creativity in complex real-life problems.
10.2 Apply the core concepts of systems thinking.
10.3 Analyze the relationship between technological processes and natural processes.
10.4 Investigate technologies designed to reduce the negative consequences of other technologies.
10.5 Research and report on processes that conserve water, soil, and energy.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student should know and be able to:
10.1.1 Explain that systems thinking apply logic and creativity with appropriate compromises in complex real-life problems.
10.2.1 Apply systems-thinking principles to the engineering design process.
10.2.2 Identify criteria and constraints and determine how these will affect the design process.
10.3.1 Analyze the relationship between technological processes and natural processes.
10.4.1 Investigate technologies designed to reduce the negative consequences of other technologies.
10.5.1 Research and develop a multimedia presentation on how industries in your region are using systems-thinking processes.
10.5.2 Asses the effectiveness of the use of technology to monitor environmental conditions.

SAMPLE PERFORMANCE TASKS:

- Students will research and report on case studies provided by industries and businesses that have had success using systems-thinking principles.
- Extension – Unit 8, Lesson 2 1-6, Pg. 357. Students will design, build and test a model of a freestanding structure used to support overhead road signs when the wind blows on the sign or when a heavy load is placed on it.

INTEGRATION/LINKAGES

- International Technology Education Association – Center to Advance the Teaching of Technology and Science (ITEA-CATTS)
- Tech-Know Project Middle School Teacher's Guide A
- Tech-Know Project Middle School Teacher's Guide B
- Human Innovation Technology Series HITS
- Engineering Your Future Project Activities
- Technology Student Association Curriculum Resources Guide for Middle School and High School Events.