

Bemidji Middle School Industrial Technology Outcomes – Revised 2010

Transportation Technology		Grades 6-7
Standards	Benchmarks	Activities/Examples
<p>2. Students will develop an understanding of the core concepts of technology.</p>	<p>M Technological systems include input, processes, output, and at times, feedback.</p>	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
<p>3. Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.</p>	<p>F Knowledge gained from other fields of study has a direct effect on the development of technological products and systems.</p>	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
<p>4. Students will develop an understanding of the cultural, social, economic, and political effects of technology.</p>	<p>D The use of technology affects human in various ways, including their safety, comfort, choices, and attitudes about technology's development and use.</p>	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>

Standards	Benchmarks		Activities/Examples
	F	The development and use of technology poses ethical issues.	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
<p>6. Students will develop an understanding of the role of society in the development and use of technology.</p>	D	Throughout history, new technologies have resulted from the demands, values, and interests of individuals, businesses, industries, and societies.	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
	E	The use of inventions and innovations has led to changes in society and the creation of new needs and wants.	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>

Standards	Benchmarks		Activities/Examples
	F	Social and cultural priorities and values are reflected in technological devices.	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
	G	Meeting societal expectations is the driving force behind the acceptance and use of products and systems.	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
<p>7. Students will develop an understanding of the influence of technology on history.</p>	C	Many inventions and innovations have evolved using slow and methodical processes of tests and refinements.	<p>An understanding of how transportation has developed through a historical timeline will be researched.</p> <p>Students will develop an understanding of how early aviation pioneers forged the advancement of air transportation through trial and error.</p>
	F	In the past, an invention or innovation was not usually developed with the knowledge of science.	<p>An understanding of how transportation has developed through a historical timeline will be researched.</p> <p>Students will develop an understanding of how early aviation pioneers forged the advancement of air transportation through trial and error.</p>

Standards	Benchmarks		Activities/Examples
<p>8. Students will develop an understanding of the attributes of design.</p>	E	<p>Design is a creative planning process that leads to useful products and systems.</p>	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
	F	<p>There is no perfect design.</p>	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
	G	<p>Requirements for design are made up of criteria and constraints.</p>	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
<p>9. Students will develop an understanding of engineering design.</p>	F	<p>Design involves a set of steps, which can be performed in different sequences and repeated as needed.</p>	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>

Standards	Benchmarks		Activities/Examples
	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.	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
	H	Modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
10. Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.	F	Troubleshooting is a problem-solving method used to identify the cause of a malfunction in a technological system.	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
	G	Invention is a process of turning ideas and imagination into devices and systems. Innovation is the process of modifying an existing product or system to improve it.	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>

Standards	Benchmarks		Activities/Examples
	H	Some technological problems are best solved through experimentation.	<p>Students will develop an understanding of transportation vehicles.</p> <p>Construction of an air transportation vehicle will be completed using a set plan and specifications.</p> <p>Students will test the vehicle using variable testing parameters.</p>
<p>11. Students will develop the abilities to apply the design process.</p>	H	Apply a design process to solve problems in and beyond the laboratory-classroom.	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
	I	Specify criteria and constraints for the design.	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>

Standards	Benchmarks		Activities/Examples
	K	Test and evaluate the design in relation to pre-established requirements, such as criteria and constraints, and refine as needed.	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
	L	Make a product or system and document the solution.	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
12. Students will develop the abilities to assess the impact of products and systems.	H	Use information provided in manuals, protocols, or by experienced people to see and understand how things work.	<p>Students will develop an understanding of transportation vehicles.</p> <p>Construction of an air transportation vehicle will be completed using a set plan and specifications.</p> <p>Students will test the vehicle using variable testing parameters.</p>
	I	Use tools, materials, and machines safely to diagnose, adjust, and repair systems.	<p>Students will develop an understanding of transportation vehicles.</p> <p>Construction of an air transportation vehicle will be completed using a set plan and specifications.</p> <p>Students will test the vehicle using variable testing parameters.</p>

Standards	Benchmarks		Activities/Examples
	J	Use computers and calculators in various applications.	<p>Students will develop an understanding of transportation vehicles.</p> <p>Construction of an air transportation vehicle will be completed using a set plan and specifications.</p> <p>Students will test the vehicle using variable testing parameters.</p>
	K	Operate and maintain systems in order to achieve a given purpose.	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>
<p>17. Students will develop an understanding of and be able to select and use information and communication technologies.</p>	F	Communication technology is the transfer of messages among people and/or machines over distances through the use of technology.	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>

Standards	Benchmarks	Activities/Examples
	<p>G Letters, characters, icons, and signs are symbols that represent ideas, quantities, elements, and operations.</p>	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
	<p>H Information and communication systems allow information to be transferred from human to human, human to machine, and machine to human.</p>	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
	<p>I Communication systems are made up of a source, encoder, transmitter, receiver, decoder, and destination.</p>	<p>Students will design, draw, and build a land transportation vehicle.</p> <p>Students will test the vehicle for efficiency and modify accordingly.</p> <p>Students will compete with their vehicles in a challenge competition.</p> <p>Students will follow safety rules and procedures while building projects.</p>

Standards	Benchmarks		Activities/Examples
	L	Information and communication technologies include the inputs, processes, and outputs associated with sending and receiving information.	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
<p>18. Students will develop an understanding of and be able to select and use transportation technologies.</p>	G	Transportation vehicles are made up of subsystems, such as structural propulsion, suspension, guidance, control, and support that must function together for a system to work effectively.	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>
	H	Governmental regulations often influence the design and operation of transportation systems.	<p>Students will understand basic transportation vehicles and systems.</p> <p>Students will research and demonstrate knowledge of several modes of transportation.</p> <p>Students will gain knowledge of how transportation affects their everyday lives.</p> <p>Students will understand how transportation is an integral part of modern society.</p>