

## Bemidji Middle School Industrial Technology Outcomes – Revised 2017

<b>Transportation Technology</b>		<b>Grades 6-7</b>
<b>Standards</b>	<b>Benchmarks</b>	<b>Activities/Examples</b>
<b>2. Students will develop an understanding of the core concepts of technology.</b>	M Technological systems include input, processes, output, and at times, feedback.	<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>
<b>3. Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.</b>	F Knowledge gained from other fields of study has a direct effect on the development of technological products and systems.	<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>
<b>4. Students will develop an understanding of the cultural, social, economic, and political effects of technology.</b>	D The use of technology affects human in various ways, including their safety, comfort, choices, and attitudes about technology's development and use.	<p>Students will understand basic transportation vehicles and systems.</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>F The development and use of technology poses ethical issues.</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><b>6. Students will develop an understanding of the role of society in the development and use of technology.</b></p>	<p>D Throughout history, new technologies have resulted from the demands, values, and interests of individuals, businesses, industries, and societies.</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>E The use of inventions and innovations has led to changes in society and the creation of new needs and wants.</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
	<p>F Social and cultural priorities and values are reflected in technological devices.</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>G Meeting societal expectations is the driving force behind the acceptance and use of 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><b>7. Students will develop an understanding of the influence of technology on history.</b></p>	<p>C Many inventions and innovations have evolved using slow and methodical processes of tests and refinements.</p>	<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>
	<p>F In the past, an invention or innovation was not usually developed with the knowledge of science.</p>	<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><b>8. Students will develop an understanding of the attributes of design.</b></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><b>9. Students will develop an understanding of engineering design.</b></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
	<p>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>	<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>H Modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.</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><b>10. Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.</b></p>	<p>F Troubleshooting is a problem-solving method used to identify the cause of a malfunction in a technological system.</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>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>	<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> <hr/> <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><b>11. Students will develop the abilities to apply the design process.</b></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>

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	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>
<b>12. Students will develop the abilities to assess the impact of products and systems.</b>	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><b>17. Students will develop an understanding of and be able to select and use information and communication technologies.</b></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>



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	<p><b>G</b> 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><b>H</b> 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><b>I</b> 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><b>18. Students will develop an understanding of and be able to select and use transportation technologies.</b></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>