

Bemidji Middle School Industrial Technology Outcomes – Revised 2010

Architectural Design & Modeling		Grade 8
Standards	Benchmarks	Activities/Examples
1. Students will develop an understanding of the characteristics and scope of technology.	G The development of technology is a human activity and is the result of individual and collective needs and the ability to be creative.	Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective. Students will learn how architecture effects their lives and its impact on society and the economy. Students will study architectural trends, building rules, regulations, and codes.
3. Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.	E A product, system, or environment developed for one setting may be applied to another setting.	Students will develop an architectural model using a scale of 1/16 inch = 1 foot. Standard model building procedures and materials will be covered and implemented on the project. Learned safety rules and procedures will be used on project construction.
	F Knowledge gained from other fields of study has a direct effect on the development of technological products and systems.	Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective. Students will learn how architecture effects their lives and its impact on society and the economy. Students will study architectural trends, building rules, regulations, and codes.
		Students will develop an architectural model using a scale of 1/16 inch = 1 foot. Standard model building procedures and materials will be covered and implemented on the project. Learned safety rules and procedures will be used on project construction.

Standards	Benchmarks		Activities/Examples
<p>4. Students will develop an understanding of the cultural, social, economic, and political effects of technology.</p>	D	<p>The use of technology affects humans in various ways, including their safety, comfort, choices, and attitudes about technology’s development and use.</p>	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p>
<p>5. Students will develop an understanding of the effects of technology on the environment.</p>	D	<p>The management of waste produced by technological systems is an important societal issue.</p>	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p>
	F	<p>Decisions to develop and use technologies often put environmental and economic concerns in direct competition with one another.</p>	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p> <p>Students will create a model framed structure following construction procedures outlined in the instruction booklet.</p> <p>Framing terminology will be used to correctly identify and place wall components in the proper locations to complete the model.</p>

Standards	Benchmarks		Activities/Examples
<p>6. Students will develop an understanding of the role of society in the development and use of technology.</p>	G	<p>Meeting societal expectations is the driving force behind the acceptance and use of products and systems.</p>	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p>
<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 and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p> <p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p>

Standards	Benchmarks	Activities/Examples
	<p>F There is no perfect design.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p> <p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p>
	<p>G Requirements for design are made up of criteria and constraints.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
		<p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p>

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<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 and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p> <p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p>
	H	<p>Use information provided in manuals, protocols, or by experienced people to see and understand how things work.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p> <p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p> <p>Students will create a model framed structure following construction procedures outlined in the instruction booklet.</p> <p>Framing terminology will be used to correctly identify and place wall components in the proper locations to complete the model.</p>

Standards	Benchmarks		Activities/Examples
<p>11. Students will develop the abilities to apply the design process.</p>	H	<p>Apply a design process to solve problems in and beyond the laboratory-classroom.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
	I	<p>Specify criteria and constraints for the design.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
	J	<p>Make two-dimensional and three-dimensional representations of the designed solution.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
	L	<p>Make a product or system and document the solution.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
<p>12. Students will develop the abilities to use and maintain technological products and systems.</p>	H	<p>Use information provided in manuals, protocols, or by experienced people to see and understand how things work.</p>	<p>Students will develop an architectural model using a scale of 1/16 inch = 1 foot.</p> <p>Standard model building procedures and materials will be covered and implemented on the project.</p> <p>Learned safety rules and procedures will be used on project construction.</p>

Standards	Benchmarks	Activities/Examples
	<p>I Use tools, materials, and machines safely to diagnose, adjust, and repair systems.</p>	<p>Students will develop an architectural model using a scale of 1/16 inch = 1 foot.</p> <p>Standard model building procedures and materials will be covered and implemented on the project.</p> <p>Learned safety rules and procedures will be used on project construction.</p>
	<p>J Use computers and calculators in various applications.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p> <p>Students will develop an architectural model using a scale of 1/16 inch = 1 foot.</p> <p>Standard model building procedures and materials will be covered and implemented on the project.</p> <p>Learned safety rules and procedures will be used on project construction.</p>