

**RESEARCH PROCESS SCOPE AND SEQUENCE
GRADES 9-12**

1/5/07

GRADE	STRAND	STANDARD	BENCHMARKS	ISTE, AASL	MN CONTENT	RESOURCES
9-12	RESEARCH PROCESS	The student will follow a systematic research process that involves formulating a question, gathering, evaluating, and organizing information, drawing conclusions, presenting results to an audience, and evaluating both the product and the process	<p>Question:</p> <ol style="list-style-type: none"> 1. Students recognize that accurate and comprehensive information is the basis for informed decision making. 2. Students generate research questions based on interests, observations, information or stories or based on an assigned topic. 3. Students understand the extent of an issue and finalize research question by conducting preliminary research. 4. Students broaden or narrow question to meet requirements. 5. Students revise, add, or delete questions as information needs change. 	<p>ISTE Profile 9-12: 7,8,10</p> <p>AASL 1:1,2,3; 4: 1,2</p>	MN Standards Writing/Research Benchmarks	
			<p>Gather:</p> <ol style="list-style-type: none"> 1. Students identify a wide range of potential resources to answer a question. <ol style="list-style-type: none"> a. Students understand where and how information is created, including an understanding of scientific methods. b. Students understand different research methods used in each discipline. c. Students understand that theories and sources are continually changed and updated. d. Students understand the difference between scholarly, popular, and trade publications in print or digital format 	<p>ISTE Profile 9-12: 7,8,10</p> <p>AASL 1:4,5; 2:1,2,3; 4: 1,2</p>		

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			<ul style="list-style-type: none"> e. Students distinguish between primary and secondary sources, including techniques for verifying the authenticity of primary documents found on the Internet. 2. Students find information in print, non-print, and digital resources. <ul style="list-style-type: none"> a. Students use advanced search options in library catalog and databases <ul style="list-style-type: none"> - Students search for information using keyword (Boolean operators, truncation, adjacency, proximity, wild cards) - Students search for information using controlled vocabulary (subject headings) -Students create enduring (saved) searches and bibliographies within catalogs and databases. b. Students retrieve information sources, demonstrating an understanding of various library classification systems. (Dewey, Library of Congress, and other schemes) c. Students use advanced features of Internet search engines. <ul style="list-style-type: none"> -Students find sites that link to a particular site. 			

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			<p>-Students use specialized search engines (For example, use <i>Alexa</i> to find related sites, <i>Scirus</i> for scientific information)</p> <p>-Students use the hierarchy of an URL to navigate a site.</p> <p>-Students evaluate search results, demonstrating an understanding of how search engines determine rank or relevancy.</p> <p>-Students search for information on web sites using “tags” and hierarchical directories</p> <p>3. Students access and retrieve resources form local, regional, state, and national libraries through interlibrary loan (MnLINK.)</p> <p>4. Students evaluate information sources, considering currency, accuracy, validity, relevance, completeness, bias, intended audience, and purpose.</p> <p>5. Students read, listen, and view to analyze and identify important ideas and supporting evidence in an information source, using logic and informed judgment to accept or reject information.</p> <p>6. Students summarize and record information using a variety of methods.</p> <p>7. Students note direct quotations.</p> <p>8. Students use a standard format, specific</p>			

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			<p>to the discipline, to record bibliographic information for sources used. 9. Students design experiments, surveys, interviews etc. as needed.</p>			
			<p>Conclude: 1. Students analyze and interpret experiments, surveys, interviews etc. using quantitative and qualitative methods. 2. Students recognize categories, trends, and themes across multiple sources. a. Students notice differences between sources and seek additional sources to resolve questions. b. Students analyze and evaluate new information based on previous experience and knowledge. c. Students match information found with questions and predictions. d. Students use mind-maps, webs, or diagrams to display relationships between ideas and supporting evidence. 3. Students draw clear and appropriate conclusions supported by evidence and examples. a. Students determine patterns and discrepancies by comparing and combining information available in different sources.</p>	<p>ISTE Profile 9-12: 7,8,10 AASL 2: 4; 3:1,2,3</p>		

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			<p>b. Students resolve conflicting evidence or clarify reasons for differing interpretations of ideas or events.</p> <p>c. Students identify when information does not support tentative thesis or hypothesis; gathers additional information or revises thesis/hypothesis.</p> <p>4. Students organize information independently, deciding the structure based on the relationships among ideas and general patterns discovered.</p> <p>-Students use common organizational patterns such as logic, analogy, compare and contrast, problem and solution, cause and effect in order to inform or persuade.</p>			
			<p>Communicate</p> <p>1. Students identify and use the best medium to communicate the conclusion to an audience.</p> <p>2. Students use conventions of different media to convey meaning</p> <p>-Word processed document (effective use of font styles and integration of graphics)</p> <p>-Hand or computer-generated</p>	<p>ISTE Profile 9-12: 7,8,10</p> <p>AASL 3: 4</p>		

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			drawing or poster (effective use of design element) -Digital presentation (effective layout, animations and transitions) -Audio recording (effective use of narration, music and sound effects) -Video (effective use of visuals, audio, and effects)			
			<i>Evaluate</i> 1. Students seek review through self-reflection, peer review, and teacher feedback 2. Students compare individual findings with group or previous findings. 3. Students identify questions and ideas for further investigation.	AASL 6:1,2		