

Alignment Documentation for The Art of Effective Scientific Communication

Created by Princesa VanBuren Hansen

This course is aligned to standards from both the [MN State Academic Standards](#), as well as the [National Educational Technology Standards for Students \(NETS-S\)](#) from the [International Society for Technology in Education \(ISTE\)](#).

National Education Technology Standards for Students				
Grade	Strand/Substrand	Standard	Benchmark	Assessment/Assignment
11-12	1. Creativity and Innovation	Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.	a. apply existing knowledge to generate new ideas, products, or processes.	Research paper Poster Presentation
11-12	1. Creativity and Innovation	Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.	b. create original works as a means of personal or group expression.	Research paper Poster Presentation
11-12	2. Communication and Collaboration	Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.	a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.	Online presentation discussion in lesson 6
11-12	2. Communication and Collaboration	Students use digital media and environments to communicate and work	b. communicate information and ideas effectively to multiple	Research paper Poster Presentation

		collaboratively, including at a distance, to support individual learning and contribute to the learning of others.	audiences using a variety of media and formats.	
11-12	3. Research and Information Fluency	Students apply digital tools to gather, evaluate, and use information.	b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.	Annotated bibliography
11-12	3. Research and Information Fluency	Students apply digital tools to gather, evaluate, and use information.	c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks.	Annotated bibliography Presentation
11-12	3. Research and Information Fluency	Students apply digital tools to gather, evaluate, and use information.	d. process data and report results.	Research paper Poster Presentation
11-12	5. Digital Citizenship	Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.	b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.	Online presentation discussion in lesson 6
11-12	6. Technology Operations and Concepts	Students demonstrate a sound understanding of technology concepts, systems, and operations.	a. understand and use technology systems.	Online presentation discussion in lesson 6 Research paper Poster Presentation
11-12	6. Technology Operations and Concepts	Students demonstrate a sound understanding of technology concepts, systems, and operations.	b. select and use applications effectively and productively.	Research paper Poster Presentation
11-12	6. Technology Operations	Students demonstrate a	d. transfer current	Online presentation

	and Concepts	sound understanding of technology concepts, systems, and operations.	knowledge to learning of new technologies.	discussion in lesson 6 Research paper Poster Presentation
--	--------------	--	--	--

Minnesota State Education Standards

Grade	Strand/Substrand	Standard	Benchmark	Assessment
9-12	1. The Nature of Science and Engineering 1. The Practice of Science	1. Science is a way of knowing about the natural world and is characterized by empirical criteria, logical argument and skeptical review. 9.1.1.1.2	Understand that scientists conduct investigations for a variety of reasons, including: to discover new aspects of the natural world, to explain observed phenomena, to test the conclusions of prior investigations, or to test the predictions of current theories.	Annotated bibliography
9-12	1. The Nature of Science and Engineering 1. The Practice of Science	1. Science is a way of knowing about the natural world and is characterized by empirical criteria, logical argument and skeptical review. 9.1.1.1.3	Explain how the traditions and norms of science define the bounds of professional scientific practice and reveal instances of scientific error or misconduct. For example: The use of peer review, publications and presentations.	Annotated bibliography
9-12	1. The Nature of Science and Engineering 1. The Practice of Science	2. Scientific inquiry uses multiple interrelated processes to pose and investigate questions about the natural world. 9.1.1.2.1	Formulate a testable hypothesis, design and conduct an experiment to test the hypothesis, analyze the data, consider alternative explanations, and draw conclusions supported by evidence from the investigation.	Research paper Poster Presentation
9-12	1. The Nature of Science and Engineering	3. Science and engineering operate in the context of	Communicate, justify, and defend the procedures	Research paper Poster

	3. Interactions Among Science, Technology, Engineering, Mathematics, and Society	society and both influence and are influenced by this context. 9.1.3.3.2	and results of a scientific inquiry or engineering design project using verbal, graphic, quantitative, virtual, or written means.	Presentation
9-12	1. The Nature of Science and Engineering 3. Interactions Among Science, Technology, Engineering, Mathematics, and Society	4. Science, technology, engineering, and mathematics rely on each other to enhance knowledge and understanding. 9.1.3.4.3	Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.	Research paper Poster Presentation
9-12	1. The Nature of Science and Engineering 3. Interactions Among Science, Technology, Engineering, Mathematics, and Society	4. Science, technology, engineering, and mathematics rely on each other to enhance knowledge and understanding. 9.1.3.4.4	"Relate the reliability of data to consistency of results, identify sources of error, and suggest ways to improve the data collection and analysis. For example: Use statistical analysis or error analysis to make judgments about the validity of results "	Research paper Poster Presentation