

North Dakota Science Content and Achievement Standards

Standard 8

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North Dakota Department of Public Instruction

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Standard 8: History and Nature of Science

Standard 8: Students understand the history and nature of science.				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Kindergarten				
PEOPLE IN SCIENCE K.8.1. Explain why anyone can be a scientist	Students provide an insightful explanation why anyone can be a scientist.	Students provide a reasonable explanation why anyone can be a scientist.	Students provide a superficial explanation why anyone can be a scientist.	Students provide an unreasonable explanation why anyone can be a scientist.
Grade 1				
PEOPLE IN SCIENCE 1.8.1. Identify ways (e.g., create things, ask questions, make observations, figure things out) that everybody can do science	Students identify an extensive variety of ways that everybody can do science.	Students identify a variety of ways that everybody can do science.	Students identify some different ways that everybody can do science.	Students identify few ways that everybody can do science.
Grade 2				
PEOPLE IN SCIENCE 2.8.1. Identify ways scientists work together to solve problems (e.g., share results, teamwork, investigate)	Students identify an extensive variety of ways scientists work together to solve problems.	Students identify a variety of ways scientists work together to solve problems.	Students identify some different ways scientists work together to solve problems.	Students identify few ways scientists work together to solve problems.
Grade 3				
PEOPLE IN SCIENCE 3.8.1. Identify ways people of all ages, genders, and backgrounds use science in their careers and in daily life (e.g., children check temperature conditions to decide what to wear, farmer uses genetic grains, hikers use GPS, depth-finder in boat, hearing-aides for disabilities)	Students identify an extensive variety of ways people of all ages, genders, and backgrounds use science in their careers and in daily life.	Students identify many different ways people of all ages, genders, and backgrounds use science in their careers and in daily life.	Students identify some different ways people of all ages, genders, and backgrounds use science in their careers and in daily life.	Students identify few ways people of all ages, genders, and backgrounds use science in their careers and in daily life.

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Grade 4				
PEOPLE IN SCIENCE				
4.8.1. Identify a variety of careers in the field of science	Students identify an extensive variety of careers in the field of science.	Students identify many different careers in the field of science.	Students identify some different careers in the field of science.	Students identify few careers in the field of science.
SCIENTIFIC KNOWLEDGE				
4.8.2. Identify scientific advances that changed popular beliefs (e.g., Earth was center of universe, world was flat, man was incapable of flight)	Students identify an extensive variety of scientific advances that changed popular beliefs.	Students identify many different scientific advances that changed popular beliefs.	Students identify some different scientific advances that changed popular beliefs.	Students identify a limited variety of scientific advances that changed popular beliefs.
Grade 5				
PEOPLE IN SCIENCE <i>No benchmark expectations at this level</i>				
SCIENTIFIC KNOWLEDGE				
5.8.1. Explain why results of similar scientific investigations may turn out differently (i.e., inconsistencies in methods, materials, and observations)	Students provide an insightful explanation why results of similar scientific investigations may turn out differently.	Students provide a reasonable explanation why results of similar scientific investigations may turn out differently.	Students provide a superficial explanation why results of similar scientific investigations may turn out differently.	Students provide an unreasonable explanation why results of similar scientific investigations may turn out differently.
Grade 6				
PEOPLE IN SCIENCE				
6.8.1. Identify various settings in which scientists may work alone or in a team (e.g., industries, laboratories, field work)	Students identify an extensive variety of settings for scientific work.	Students identify many different settings for scientific work.	Students identify some different settings for scientific work.	Students identify a limited variety of settings for scientific work.

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<p>SCIENTIFIC KNOWLEDGE 6.8.2. Identify scientific advances that have resulted in new ideas and further-advance</p>	Students identify an extensive variety of scientific advances that result in new ideas and further advances.	Students identify a variety of scientific advances that result in new ideas and further advances.	Students identify some different scientific advances that result in new ideas and further advances.	Students identify few scientific advances that result in new ideas and further advances.
Grade 7				
<p>PEOPLE IN SCIENCE 7.8.1. Explain how science is influenced by human qualities (e.g., reasoning, insightfulness, creativity, life-long learning)</p>	Students provide an insightful explanation of how science is influenced by human qualities.	Students provide a reasonable explanation of how science is influenced by human qualities.	Students provide a superficial explanation of how science is influenced by human qualities.	Students provide an unreasonable explanation of how science is influenced by human qualities.
<p>SCIENTIFIC KNOWLEDGE 7.8.2. Explain the importance of keeping clear and accurate records of scientific investigations (e.g., Darwin’s research, DaVinci’s notebooks, Galileo’s notes, Goodall’s observations)</p>	Students provide an insightful explanation of the importance of keeping clear and accurate records.	Students provide a reasonable explanation of the importance of keeping clear and accurate records.	Students provide a superficial explanation of the importance of keeping clear and accurate records.	Students provide an unreasonable explanation of the importance of keeping clear and accurate records.
Grade 8				
<p>PEOPLE IN SCIENCE <i>No benchmark expectations at this level</i></p>				
<p>SCIENTIFIC KNOWLEDGE 8.8.1. Explain how many people from various cultures have made important contributions to the advancement of science and technology</p>	Students provide an insightful explanation of how many people from various cultures have made important contributions to the advancement of science and technology.	Students provide a reasonable explanation of how many people from various cultures have made important contributions to the advancement of science and technology.	Students provide a superficial explanation of how many people from various cultures have made important contributions to the advancement of science and technology.	Students provide an unreasonable explanation of how many people from various cultures have made important contributions to the advancement of science and technology.

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Grade 9-10				
PEOPLE IN SCIENCE				
9-10.8.1. Identify the role of scientists in theoretical and applied science (e.g., careers, employment possibilities)	Students identify all of the significant details of the role of scientists in theoretical and applied science.	Students identify most of the significant details of the role of scientists in theoretical and applied science.	Students identify some of the significant details of the role of scientists in theoretical and applied science.	Students identify few of the significant details of the role of scientists in theoretical and applied science.
9-10.8.2. Identify the human characteristics that influence scientific advancement (e.g., intellectual honesty, openness, objectivity, curiosity, skepticism, ethical conduct, cooperation)	Students identify an extensive variety of human characteristics that influence scientific advancement.	Students identify a variety of human characteristics that influence scientific advancement.	Students identify some different human characteristics that influence scientific advancement.	Students identify few human characteristics that influence scientific advancement.
9-10.8.3. Explain how individuals and groups, from different disciplines in and outside of science, contribute to science at different levels of complexity	Students provide an insightful explanation how individuals and groups, from different disciplines in and outside of science, contribute to science at different levels of complexity.	Students provide an unreasonable explanation how individuals and groups, from different disciplines in and outside of science, contribute to science at different levels of complexity.	Students provide a superficial explanation how individuals and groups, from different disciplines in and outside of science, contribute to science at different levels of complexity.	Students provide an unreasonable explanation how individuals and groups, from different disciplines in and outside of science, contribute to science at different levels of complexity.
SCIENTIFIC KNOWLEDGE				
9-10.8.4. Identify theories that have changed over time (e.g., alchemy, atomic structure, model of the solar system)	Students identify an extensive variety of theories that have changed over time.	Students identify a variety of theories that have changed over time.	Students identify some different theories that have changed over time.	Students identify few theories that have changed over time.

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<p>SCIENCE AND SOCIETY</p> <p>9-10.8.5. Explain how views and attitudes have influenced the development of science (e.g., religion, previous knowledge, cultural tradition, superstition, folklore, legends)</p> <p>Grade 11-12</p>	<p>Students provide an insightful explanation of views and attitudes that have influenced the development of science.</p>	<p>Students provide a reasonable explanation of views and attitudes that have influenced the development of science.</p>	<p>Students provide a superficial explanation of views and attitudes that have influenced the development of science.</p>	<p>Students provide an unreasonable explanation of views and attitudes that have influenced the development of science.</p>
<p>PEOPLE IN SCIENCE</p> <p><i>No benchmark expectations at this level</i></p> <p>SCIENTIFIC KNOWLEDGE</p> <p>11-12.8.1. Identify the criteria that scientific explanations must meet to be considered valid (e.g., must be based on consistent and repeatable data, be consistent with experimental and observational evidence about nature, make accurate predictions about systems being studied, be logical, report methods and results, be open to question and reexamination, respect rules of evidence)</p>				
<p>SCIENCE AND SOCIETY</p> <p><i>No benchmark expectations at this level</i></p>				