

Oklahoma Academic Standards

Science and Social Studies



OKLAHOMA
Education



Introductions

Office of Standards & Learning

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Goals

- Review the standards revision process
- Provide an overview of changes in OAS-Science
- Provide an overview of changes in OAS-Social Studies

Revision of Oklahoma Academic Standards

“The subject matter standards shall be thoroughly reviewed by the State Board every six (6) years according to and in coordination with the existing subject area textbook adoption cycle. After review, the State Board shall adopt any revisions in such subject matter standards deemed necessary to achieve further improvements in the quality of education for the standards of this state.”

~ 70 O.S. § 11-103.6a

Revision Process: Committee Responsibilities

Executive Committee

Supports OSDE in guiding and finalizing the revision process and documents.

Writing Committee

Reviews/revises standards and responds to feedback from Review Committee.

Review Committee

Reviews early drafts of the standards revised by the Writing Committee and provides feedback.

Revision Process: Focus Group and Public Comment

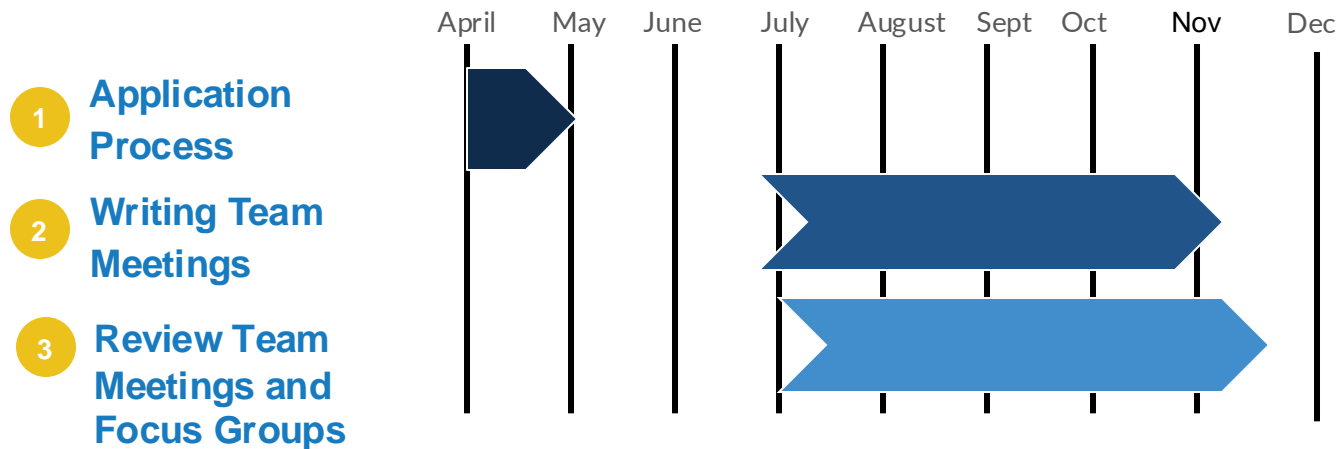
Focus Groups

Reviews standards and provides feedback based on a specific area of expertise.

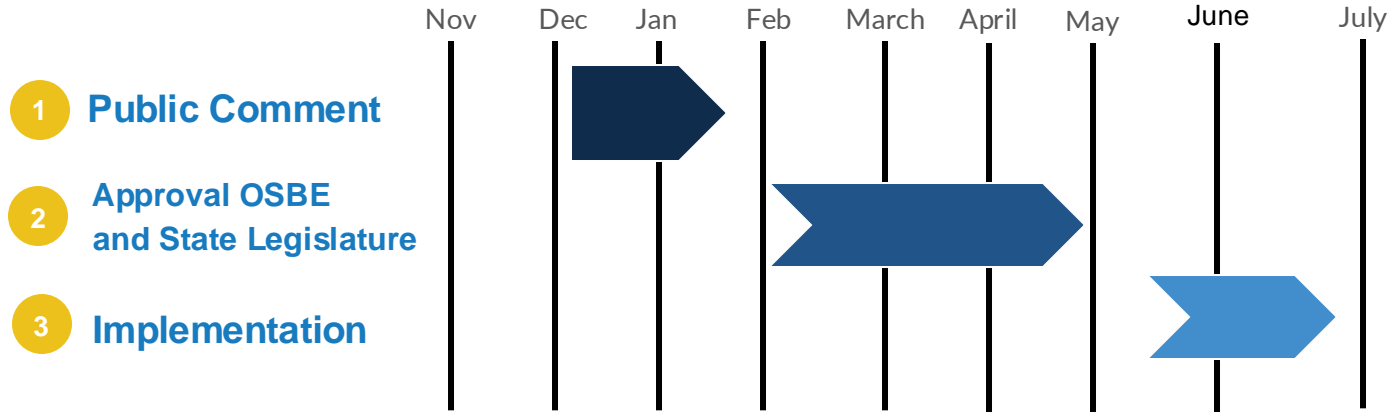
Public Comment

Reviews standards and provides feedback for the OSDE to consider.

Timeline



Timeline Continued



Composition of Committees and Focus Groups

- School Districts
- Higher Education Institutions
- Community Members
- Educational Organizations
- Tribal Members

Oklahoma Academic Standards for Science

Overview of Updates to the OAS-S

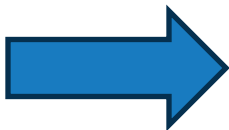
- **Addition of headings to the Disciplinary Core Ideas (DCI)**
 - Example: 8.PS4.3 - Influence of Science, Engineering, and Technology on Society and the Natural World

Waves and Their Applications in Technologies for Information Transfer (PS4)		
8.PS4.3 Integrate qualitative scientific and technical information to support the claim that digitized signals (sent as wave pulses) are a more reliable way to encode and transmit information.*		
<p>Clarification Statement: Emphasis is on a basic understanding that waves can be used for communication purposes. Examples could include using fiber optic cable to transmit light pulses, radio wave pulses in WIFI devices, and conversion of stored binary patterns to make sound or text on a computer screen. Examples of reliability in encoding could include transmitting digital information at a higher quality than analog signals (digital vs. analog photographs or videos; or digital vs. analog thermometer). Examples of reliability in transmission could include the degradation of an analog signal compared to a digital signal. Assessment Boundary: Assessment does not include binary counting or the specific mechanism of any given device.</p>		
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Obtaining, Evaluating, and Communicating Evidence</p> <ul style="list-style-type: none"> Integrate qualitative scientific and technical information in written text with that contained in media or visual displays to clarify claims and findings. 	<p>Information Technologies and Instrumentation</p> <ul style="list-style-type: none"> Many modern communications devices use digitized signals (sent as wave pulses) as they are a more reliable way to encode and transmit information. <p>Influence of Science, Engineering, and Technology on Society and the Natural World</p> <ul style="list-style-type: none"> Technologies extend the measurement, exploration, modeling, and computational capacity of scientific investigations. 	<p>Structure and Function</p> <ul style="list-style-type: none"> Structures can be designed to serve particular functions by taking into account the properties of different materials; and how materials can be shaped and used.

Overview of Updates to the OAS-S

- Updates to the Science and Engineering Practices (SEP) or Crosscutting Concepts (CCC)
 - SEP – 7.PS1.1 Developing and Using Models

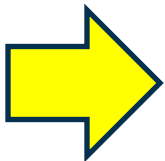
GRADE 7 (7)		
Matter and Its Interaction (PS1)		
7.PS1.1 Develop and use models to describe the atomic composition of simple molecules and extended structures.		
<p>Clarification Statement: Emphasis is on developing models of molecules that vary in complexity. Examples of simple molecules could include ammonia and/or methanol. Examples of extended structures could include sodium chloride or diamonds. Examples of molecular-level models could include drawings, 3D ball and stick structures, or computer representations showing different molecules with different types of atoms.</p> <p>Assessment Boundary: Assessment does not include the subatomic structure of an atom, valence electrons, and bonding energy, discussing the ionic nature of subunits of complex structures, or a complete depiction of all individual atoms in a complex molecule or extended structure.</p>		
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models <ul style="list-style-type: none">• Develop and use a model to describe unobservable mechanisms.	Structure and Properties of Matter <ul style="list-style-type: none">• Substances are made from different types of atoms, which combine with one another in various ways.• Atoms form molecules that range in size from two to thousands of atoms.• Solids may be formed from molecules, or they may be extended structures with repeating subunits (e.g., crystals).	Scale, Proportion, and Quantity <ul style="list-style-type: none">• Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.



Focus of Writing and Review Committees

- Addition of Connections to Science Literacy

GRADE 1 (1)		
Waves and Their Applications in Technologies for Information Transfer (PS4)		
1.PS4.1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.		
<p>Clarification Statement: Examples of vibrating materials that make sound could include tuning forks, kazoos, plucking a stretched string or rubber band, and stringed instruments. Examples of sound making matter vibrate could include holding a piece of paper near a speaker making sound, placing a hand on personal larynx or mouth while humming, and holding an object near a vibrating tuning fork. Assessment Boundary: Assessment does not include how sound travels or wave characteristics, including but not limited to, wavelength and amplitude.</p>		
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations <ul style="list-style-type: none"> Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question. 	Wave Properties <ul style="list-style-type: none"> Sound can make matter vibrate, and vibrating matter can make sound. 	Cause and Effect <ul style="list-style-type: none"> Simple tests can be designed to gather evidence to support or refute student ideas about causes.
Connections to Scientific Literacy		
Scientific Investigations Use a Variety of Methods <ul style="list-style-type: none"> Science investigations can begin with a question. Scientists use different ways to study the world. 		



Focus of Writing and Review Committees

- Addition of Aeronautics Standards for High School and Grade-Banded Engineering Standards

Aeronautics (AR)		
Matter and Its Interactions (PS1)		
AR.PS1.3 Plan and conduct an investigation to compare the structure of substances at the macroscopic scale to infer the strength of electrical forces between particles.		
<p>Clarification Statement: Emphasis is on understanding the relative strengths of forces between particles and how those forces contribute to macroscopic properties of materials (e.g., melting point, vapor pressure, surface tension). Investigations could include comparing structure and properties of materials (e.g., metals, plastics, composites) used in aircraft construction to better understand how these materials influence aircraft performance, safety, and regulatory compliance (e.g., meeting FAA standards and regulations). Safety considerations could include how material defects (e.g., cracks, corrosion, fatigue) affect structural integrity of an aircraft. Assessment Boundary: Investigations should focus on observable characteristics and the relationship between material structure and bulk properties. Assessment can include simplified examples of aircraft construction and regulatory standards related to material performance and safety.</p>		
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements; consider limitations on the precision of the data (e.g., number of trials, cost, risk, time); and refine the design accordingly. 	<p>Structure and Properties of Matter</p> <ul style="list-style-type: none"> The structure and interactions of matter at the macroscopic scale are determined by electrical forces within and between atoms. 	<p>Structure and Function</p> <ul style="list-style-type: none"> The functions and properties of natural and designed objects and systems can be inferred from their overall structure, the way their components are shaped and used, and the molecular substructures of its various materials.

Public Comments

- Public comments were received and were analyzed for possible incorporation into the drafts of the standards.
 - Science – Moving scientific literacy out of the Science and Engineering Practices or Crosscutting concepts to a new section under the standard.

Oklahoma Academic Standards for Social Studies

Focus of Writing and Review Committees

- Retain the scope and sequence and format that the Fordham Institute rated highly
- Clarification and elaboration of learning expectations suggested by the Fordham Institute

Focus of Writing and Review Committees

- Social Studies Practices included in each grade level/subject
- Strengthened the concept of tribal sovereignty

Focus of Writing and Review Committees

- Civics and constitutional studies have been strengthened in every grade/subject
 - 2.1.6 Explain that governments exist at the local, state, national, and Tribal levels to represent the needs of the people, make and enforce laws, and help resolve conflicts.

Focus of Writing and Review Committees

- 6.5.2 Compare common features of the Constitution of the United States to other representative governments of the Western Hemisphere, focusing on the principles of limited government, individual rights and liberties, and the role of the citizen in the selection of government officials.

Focus of Writing and Review Committees

- OKH.8.3 Analyze the evolving relationship between the state and Oklahoma's thirty-nine Tribal governments.
 - B. Explain how Tribal governments are established under various constitution-based or traditional structures, operating as sovereign nations whose citizens select their own officials.
 - C. Describe Tribal authority to enact and enforce laws, manage judicial systems, lands and natural resources, education, and other programs for Tribal citizens.

Public Comments

- Public comments were received and were analyzed for possible incorporation into the drafts of the standards.
 - Social Studies – clarifications to make language specific, example – adding artwork into the list of primary and secondary sources.

Questions

- Today, the State Board of Education will vote to approve these Oklahoma Academic Standards.
- If approved, the standards will move to the legislature for final approval.
- Do you have any clarifying questions before voting?