

# Overview of Changes Science Standards

## Principles of the Standards Review Process

The Colorado Model Content Standards revision process was informed by these guiding principles:

- Begin with the end in mind; define what prepared graduates need in order to be successful using 21<sup>st</sup> century skills in our global economy.
- Align K-12 standards with early childhood expectations and higher education.
- In order to be globally competitive, international and national benchmarking strongly informs the new standards.
- Change is necessary.
- Standards will be deliberately designed for clarity, rigor, and coherence.
- There will be fewer, higher, and clearer standards.
- Standards will be actionable.

## Notable Changes to the Colorado Model Content Standards in Science

The most evident changes to the Colorado standards are replacing grade-band expectations (K-4, 5-8, and 9-12) with grade-level specific expectations. These are explained here in addition to other changes that are apparent upon comparison between the current science standards and the proposed changes.

1. **Embedding scientific inquiry and scientific process skills.** The largest change to the science standards is acknowledging that scientific inquiry, science process skills, and content cannot be taught separately. These important aspects of science were integrated into the three science content standards.
2. **Readiness competencies.** Another change is the realization that there are other important aspects of science such as the general nature of science and application of science concepts that also cannot be separated easily from the content. These are represented as cross cutting themes. They differ significantly in their nature from evidence outcomes and their ability to be assessed. They are essential elements of the new Colorado Academic Standards and are addressed directly.
3. **Impact of standards articulation by grade level.** The original Colorado Model Content Standards for science provided learning benchmarks at grades 3, 5, 8, and 12. The science standards revision subcommittee was charged with defining at what grade students should master various concepts and skills in science. The committee members articulated expectations at appropriate each grade level through eighth grade based on national works such as *Benchmarks for Science Literacy* and the *Atlas for Science Literacy* so that students would build their knowledge of various topics.
4. **Articulation of high school standards.** High school standards are articulated by standard, not grade level. This is intended to allow districts flexibility in designing high school curriculum and courses. The standards represent what is sufficient for a high school graduate to know and be able to do in science and is not intended to suggest there be three years of science or three science courses in high school. For many students, the standards will represent only a foundation for more advanced studies in science.
5. **Integration of P-2 Council's recommendations.** The science subcommittee integrated the skills from the *Building Blocks to the Colorado K-12 Standards* into P-12 science standards, with the inclusion of six preschool science standards.

6.

**Below is a quick guide to other changes in the science standards:**

Area		Summary of Changes	
Area	Previous Standards	Revised Standards	
<b>Number of standards</b>	Five standards	By embedding and using readiness competencies the proposed number of standards is three.	
<b>Names of standards</b>	<p><b>Standard 1</b> Scientific Investigations</p> <p><b>Standard 2</b> Physical Science</p> <p><b>Standard 3</b> Life Science</p> <p><b>Standard 4</b> Earth Science</p> <p><b>Standard 5</b> Nature of Science</p>	<p><b>Standard 1</b> Physical Science</p> <p><b>Standard 2</b> Life Science</p> <p><b>Standard 3</b> Earth Systems Science</p>	
<b>Integration of 21<sup>st</sup> century and postsecondary workforce readiness skills</b>	<ul style="list-style-type: none"> <li>• These skills primarily are associated with the scientific investigations and nature of science standards (1 and 5).</li> </ul>	<ul style="list-style-type: none"> <li>• These skills were embedded in every grade level expectation.</li> </ul>	
<b>P-2</b>	<ul style="list-style-type: none"> <li>• Standards articulated for grade band beginning with kindergarten.</li> <li>• Benchmarks articulated K-3.</li> </ul>	<ul style="list-style-type: none"> <li>• Preschool included.</li> <li>• Grade level expectations articulated for each elementary grade.</li> <li>• Clear expectations articulated for grades P-2.</li> </ul>	
<b>Number of grade level expectations (GLE)</b>	<ul style="list-style-type: none"> <li>• There are 155 benchmarks.</li> </ul>	<ul style="list-style-type: none"> <li>• There 82 grade level expectations.</li> </ul>	