Iowa Science Standards

An Overview for Principals

Instructional leaders play a critical role in the lowa Science Standards implementation process. The purpose of this document is to introduce principals to the lowa Science Standards and to provide a general overview of the key instructional and conceptual shifts required by the lowa Science Standards.

What are the lowa Science Standards?

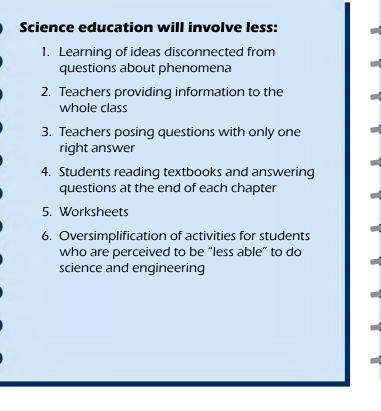
The lowa Science Standards are standards with a purpose. These K-12 standards set expectations for what students should know and be able to do in every grade and across every scientific discipline, including engineering and the technological applications of science.

A major difference between the lowa Science Standards and previous science standards is "three-dimensional" (3D) learning.

3D learning refers to the thoughtful and deliberate integration of three distinct dimensions: Scientific and Engineering Practices (SEPs), Disciplinary Core Ideas (DCIs), and Crosscutting Concepts (CCCs). Through 3D learning, the lowa Science Standards emphasize that science is not just a series of isolated facts. This awareness enables students to view science more as an interrelated world of inquiry and phenomena rather than a static set of science disciplines.

The lowa Science Standards represent a fundamental shift in science education and require a different approach to teaching science than has been done in the past. Looking ahead, teachers can use a range of strategies to engage students and create opportunities to demonstrate their thinking and learning.

How will science education change with the lowa Science Standards?



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What are key questions that principals should consider during implementation?

- What kind of professional development is available and how do I ensure my teachers and I have access to it? How do I know if it's high quality?
- What lowa Science Standards-aligned instructional materials do my teachers and students need and how do I make sure they get them? How do I know if the materials are high quality?
- What formative assessments are available to help teachers continually evaluate their students' learning?
- How can we connect the lowa Science Standards with work we are doing to improve teaching and learning in English language arts and math?

What can principals do to support implementation?

- Focus on what the students are doing first and then think about what the teacher has designed to make that happen.
- Know the standards enough to identify and provide feedback on aspects of the three dimensions during classroom visits.
- Engage teachers on how the three dimensions are incorporated into lessons.

For more information about the lowa Science Standards

- The official site for the Iowa Science Standards: https://iowacore.gov/iowa-core/subject/science
- Iowa Core science resources: https://iowacore.gov/content/science-resources
- The official site for the Next Generation Science: Standards http://www.nextgenscience.org
- National Science Teachers Association: http://www.nsta.org
- STEM Teaching Tools: http://stemteachingtools.org/
- National Research Council's Guide to Implementing the Iowa Science Standards: http://www.nap.edu/read/18802/chapter/1

Additionally, principals can:

- Build a long-term plan that focuses on the building's collective vision for science education (20)
- Elevate teacher leaders and support them as they work to help their colleagues (38-40)
- Find ways to provide high-quality, intensive professional learning to all teachers (41-46)
- Seek out professional learning for yourself (49)
- Connect what is happening with science in your building to other buildings in your district, state, or any Next Generation Science Standards-adopted state (70-73)
- Be critical consumers of any new curricula (56, 57)
- Provide leadership to develop or revise a system of assessment for measuring student learning in science (61-66)

All parenthetical numbers above refer to pages in the National Research Council's Guide to Implementing the Next Generation Science Standards.

What are some common pitfalls that can undermine successful implementation?

- Expecting instruction to change overnight (35)
- Expecting teachers to do it alone (35)
- Asking "Which standard are you teaching today?" (58)
- Failing to communicate with parents and community about what is changing and why you are changing it (84)

All parenthetical numbers above refer to pages in the National Research Council's Guide to Implementing the Next Generation Science Standards.