



NSTA Position Statement

Leadership in Science Education

Rationale

NSTA strongly supports using the National Science Education Standards (NSES) as the framework for implementing reform in science education. Essential elements of science education reform are aligning curriculum, instruction, and assessment with national, state, and local standards; implementing professional development based on district and state needs and objectives; and ensuring that the infrastructure needed to sustain the science program over time is firmly in place. NSTA believes that the only way to realize these goals is through the presence of strong leaders at the district and state levels.

Declarations

Science leaders must cultivate a leadership network consisting of principals, lead teachers, science department heads, and community leaders to implement science education reform at all levels of the school system. Furthermore, local superintendents, local school boards, and chief state school officers must work closely with science leaders as they move forward with science education reform. Therefore, NSTA strongly encourages local superintendents, local school boards, and chief state school officers to support science leaders by establishing district- and statewide policies that promote effective science education reform.

Using the NSES as a framework, NSTA makes the following declarations about the crucial role of science leaders and their leadership network in implementing science education reform and the administrative support they need in order to be successful.

In the area of science teaching and learning, science leaders must

- Ensure that scientific inquiry and the development of science process skills, such as problem solving, are essential components of instruction and are integrated with content delivery.
- Encourage the use of a variety of teaching styles that emphasize constructivist approaches, including differentiated instruction and cooperative learning.
- Encourage the use of student self-assessment in the classroom.

- Regularly communicate progress in student learning to parents and students.
- Build principals' capacities to recognize standards-based science instruction and to provide instructional leadership in science.

In the area of professional development, science leaders must

- Facilitate regular teacher meetings designed to improve science instruction at both the building and district levels.
- Actively involve teachers in the decision making for professional development programs, curriculum changes, and other activities that affect their practice.
- Use disaggregated student achievement data and teacher evaluation processes to drive instructional improvement and to plan professional development at the individual, school, and district levels that are rich in science content and model best practices.
- Promote collaboration and partnership among district and state policy makers and universities to develop licensure requirements and ensure effective recruitment, induction, and retention of the science teaching workforce.
- Provide appropriate mentoring relationships for new teachers.

In the area of science curriculum, science leaders must

- Develop and align curriculum, assessment, and instruction with national and state standards while meeting local needs.
- Ensure the development and/or selection of science curriculum that is pedagogically appropriate and encompasses strategies for building conceptual understanding.
- Ensure the development and/or selection of standards-based science curriculum that infuses inquiry, promotes scientific concepts and processes, and integrates content to ensure understanding in Earth and space sciences, biology, chemistry, and physics.
- Collaborate with post-secondary educators to ensure quality content in the preK-12 curriculum.

In the area of assessment, science leaders must

- Implement assessment methods aligned with desired student outcomes.
- Ensure the use of a variety of qualitative and quantitative assessments for school improvement, instructional improvement, and enhanced student learning.
- Provide support for the development and use of assessments that address the needs of diverse learners and that support understanding of science content and processes.
- Promote teacher use of assessment data to inform instructional practice.

Administrative Support: Key to Systemic Science Education Reform

If science leaders and their leadership network are to successfully carry out the roles outlined above, the full support and commitment of the superintendent, the board of education, and the chief state school officer are required. These key players in the reform process must shape policies that support standards-based science education, promote collaboration among an experienced science leadership network, allocate adequate funds to attract and maintain a well-qualified science teaching staff and to provide teachers with exemplary science curriculum materials, and build time into the school day for high-quality professional development programs.

Only with the kind of administrative support defined here can the science leaders move forward with systemic science education reform. By working as a team, the administration, the science leaders, and the science leadership network can ensure that all students have the opportunity to achieve scientific literacy.

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