National Science Teaching Association Position Statement

Science Education for Middle Level Learners

Introduction

NSTA recommends that schools place a strong emphasis on middle level science education, which can be achieved by staffing middle schools with teachers who are qualified to teach science and trained in and dedicated to working with students during this important period in their lives. Science concepts must be presented in an age-appropriate, engaging way so that students can build on their prior knowledge and attain the necessary background to participate successfully and responsibly in our scientific and technological society.

The middle school years (grades 6 through 8) are a time of tremendous physical, emotional, and cognitive changes for students. This period is also a pivotal time for students' understanding of and enthusiasm for science.

Declarations

NSTA recommends that teachers of middle level science

- be fully qualified to teach science in their state and have a strong knowledge of science content;
- attain a high level of knowledge about educational research on how middle level students learn, best practices, and effective instructional strategies for middle level students and have the ability to use this knowledge in the classroom;
- embrace three-dimensional learning as set forth in *A Framework for K–12 Science Education* (NRC 2012) and the *Next Generation Science Standards* (NGSS Lead States 2013);
- support the whole child with developmentally responsive instruction and positive behavior interventions and supports for emerging adolescents;
- respond to learners from diverse backgrounds, model a transdisciplinary approach to learning, and exhibit a desire to be a lifelong learner;
- create a safe environment in which students can engage in science and engineering practices in the classroom, in the laboratory, and in field settings as described in the NSTA position statement *Safety and School Science Instruction* (NSTA 2024); and
- stay abreast of current advancements in instructional technology and seek new ways to incorporate technology in their teaching.

NSTA recommends that developmentally appropriate and research-informed curriculum for middle level science programs

- align with the disciplinary core ideas, crosscutting concepts, and science and engineering practices outlined in *A Framework for K–12 Science Education* (NRC 2012);
- nurture curiosity about the natural world and include opportunities to engage in science and engineering practices;
- foster the development of a scientific mindset and an understanding of the nature of science;
- engage students in three-dimensional science learning, including laboratory investigations, simulations, fieldwork, mentorships, and research experiences that engage students in the science and engineering practices;
- incorporate independent and cooperative group learning experiences during the study of science and integrate science with other curriculum subjects in a multidisciplinary approach, such as through theme-based learning; and
- encourage the development of critical-thinking and communication skills and the sharing of ideas and results with peers.

NSTA recommends that the curriculum offer links to the real world by

- focusing instructional units on subject matter that is relevant to students' lives, interests, and experiences;
- applying content and skills learned in science class to explain phenomena, create models, and design solutions to real-world problems;
- connecting the classroom to the community through place-based learning opportunities such as field trips, inspiring speakers, and local partnerships;
- providing students with real-life experiences that enable them to develop an awareness of science-based careers and an understanding of how science is relevant to their lives;
- offering opportunities for critical-thinking and decision-making activities (e.g., evidence-based argumentation, analysis of authentic data) through involvement in community-based problems; and
- promoting societal goals for scientific, engineering, and technological literacy.

NSTA recommends that the assessment strategies used in middle level science programs

- include a variety of formative and summative assessment methods that can be used to evaluate overall student achievement and guide decisions about instruction and practices;
- be continuous and embedded in the instructional materials;
- capture students' interest to better engage them in the assessment process;
- occur frequently and allow for differentiation, modification, enrichment, and remediation;
- include questions that encompass a wide variety of lived experiences; and
- be three-dimensional in nature.

NSTA recommends that middle level administrators support the science program by

- gaining an understanding of the vision of science education set forth in *A Framework for K–12 Science Education* (NRC 2012) and helping align practices and policies to support this vision;
- providing numerous opportunities for professional development experiences that can bolster teachers' knowledge of science content and current technologies and enhance their skills in working with middle level students;
- working to make school environments as safe as possible by complying with local, state, and federal safety requirements and adhering to NSTA safety recommendations (NSTA 2024);
- proactively planning for, expanding, and updating technology infrastructure;
- setting aside time for teachers to regularly plan and strategize with colleagues in their own school as well as with those at the elementary and high school levels;
- cultivating a dedicated team of teachers with demonstrated expertise and interest in students in this age group, placing these teachers in the school system's middle schools, and permitting teachers to remain in their assignments so they can develop their expertise;
- ensuring that teachers have the recommended time allotted for middle level three-dimensional science learning; and
- providing necessary funding for three-dimensional science learning.

—Adopted by the NSTA Board of Directors, February 2003

—Revised and approved by the NSTA Board of Directors, July 2016

—Revised and approved by the NSTA Board of Directors, April 2026

References

National Academies of Sciences, Engineering, and Medicine (NASEM). 2015. *Science Teachers' Learning: Enhancing Opportunities, Creating Supportive Contexts*. National Academies Press. https://www.nationalacademies.org/projects/DBASSE-BOSE-11-04/publication/21836.

National Research Council (NRC). 2012. *A Framework for K–12 Science Education*. National Academies Press. https://www.nationalacademies.org/projects/DBASSE-CFE-09-16/publication/13165.

National Research Council (NRC). 2014. *Developing Assessments for the Next Generation Science Standards*. National Academies Press. https://www.nationalacademies.org/projects/DBASSE-BOTA-11-07/publication/18409.

National Research Council (NRC). 2015. *Guide to Implementing the Next Generation Science Standards*. National Academies Press. https://www.nationalacademies.org/projects/DBASSE-BOSE-13-02/publication/18802.

National Science Teaching Association (NSTA). 2007. *The Integral Role of Laboratory Investigations in Science. Position Statement*. NSTA.

National Science Teaching Association (NSTA). 2024. *Safety and School Science Instruction*. Position Statement. NSTA. https://www.nsta.org/nstas-official-positions/safety-and-school-science-instruction.

NGSS Lead States. 2013. *Next Generation Science Standards: For States, By States*. National Academies Press. https://www.nationalacademies.org/publications/18290.

Suggested Citation

National Science Teaching Association (NSTA). 2026. *Science Education for Middle Level Learners*. Position Statement. NSTA. https://www.nsta.org/nstas-official-positions/science-education-middle-level-learners