



Dear Supporters of Science Education,

On April 2 - 5, 2020 Massachusetts will be welcoming the National Science Teachers Association (NSTA) to Boston to host its 2020 National Conference on Science Education. Science educators, specialists, researchers, students and industry professionals will gather from across the United States and the world for an opportunity to access:

- over 1,200 workshops, demonstrations, and presentations covering every discipline, grade level, and teaching focus from grades preK–16.
- nationally renowned speakers address the hottest topics in science education.
- latest scientific research breakthroughs from experts in the field.

The Massachusetts Association of Science Teachers (MAST) supports science educators in their endeavors to attend this conference and learn from a variety of expertise from around the state and country. Our state recently adopted Science, Technology and Engineering Frameworks in 2016 which call for three-dimensional learning that combine disciplinary core ideas, the practices of scientists and crosscutting concepts that tie together in effective science learning. With a focus on rigor, coherence and progressions, educators require access to the best practices in science education that this conference provides: workshops, short-courses, exhibits, local field trips, and presentations by nationally renowned speakers in science education.

The 2020 NSTA National Conference theme is “20/20 Science: Expanding the Vision” and the sessions strands are:

*The Long View: Building a Lifelong Passion for Science*

- To build a lifelong passion for science, educators should ensure that all students have access to activities that encourage growth of individual interests. Connecting science learning to student interest builds their capacity to continue applying these skills throughout their lives. As a part of the teaching/ learning process, it is imperative to select phenomena that relate to student interests and allow students to ask their own questions, and identify possible solutions, effectively connecting with the goal of encouraging three-dimensional learning.

*Learning Science in All Spaces and Places: Near and Far*

- Students benefit when teachers engage the broader scientific community in the teaching and learning of science. Students need opportunities to see real-world connections and explore science-based careers. Teacher collaborations with business and industry, community groups, and informal science institutions strengthen learning opportunities for all students, helping to make science relevant to students in their everyday lives.

*Thinking, Acting, and Communicating Like Scientists: A Focus on Disciplinary Literacy*

- In order to generate knowledge, members within a discipline use specific practices. These include articulating questions or problems for pursuit, investigating those questions using discipline-specific methods, communicating results of investigations to specific audiences, and evaluating one's own claims and those of others. Disciplinary literacy practices are shared language and symbolic tools that members of different academic disciplines use to construct knowledge alongside others in their discipline. In science, to become critical consumers of and contributors to scientific knowledge, all students need explicit instruction in and opportunities to practice how to think, act, and communicate as scientists do.

*Aligning the Lenses: Authentic, Three-Dimensional Measurement of Student Learning*

- Whether formative or summative, assessment in a three-dimensional landscape requires greater flexibility and scope in what is measured. As teachers instruct with three dimensions, so must they assess the three dimensions of science learning. Increasingly multi-modal and performance-based assessments play an important role providing data on student progress, informing instruction and providing feedback to students. Any assessments must be useful in a variety of classroom contexts and settings and aspire to provide access and success for all students.

For educators to be as effective as possible, they must expand their knowledge and skills to implement the best educational practice. Educators who do not experience effective professional development do not improve their skills, and student learning suffers (Mizell 2010). Only 44% of teachers responding to a 2012 National Survey of Science and Mathematics Education (NSSME) had attended any form of national, regional, or state conference or meeting, and few had attended more than 35 hours of any form of professional development over the 3 years prior to the survey (Banilower et al., 2013). Thus, teachers currently do not have extensive opportunities to participate in professional development that is science specific. (National Academies of Science, Engineering, and Medicine 2015).

The Massachusetts Association of Science Teachers (MAST) encourages you to join us in our mission, to enhance science teaching and empower teachers of science, by granting educators the resources of time and financial support to attend the 2020 NSTA National Conference in Boston. Educators will take away resources for their classrooms, ideas for their curriculum, new instructional pedagogies, access to cutting edge research and state of the art teaching, a wider professional learning community, and enhanced expertise. Invest in your students by investing in their teachers' professional development. Educators will return to the classroom energized and ready to use their newly acquired science education knowledge and pedagogies to provide meaningful science instruction for their students, preparing them to be successful in scientific civic engagement and participate in a scientifically literate workforce.

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