

**CONNECTICUT STATE BOARD OF EDUCATION
Hartford**

**Position Statement on
Comprehensive STEM Education for All Students K–12**

Adopted October 3, 2018

The Connecticut State Board of Education (Board) believes the promise of an excellent public education is to equip every child with the knowledge and skills needed to succeed in college, careers and civic life. Therefore, schools must provide challenging and rigorous programs of study that integrate the knowledge and skills necessary to enable students to become productive members of society. These expectations hold for all students regardless of age, gender, socio-economic status, race/ethnicity, native language, abilities or disabilities.

The Board believes that a comprehensive science, technology, engineering and mathematics (STEM) education is key to preparing students to be innovators, problem solvers, and critical thinkers. The Board believes every student deserves a comprehensive STEM education that integrates the knowledge, skills, and practices of the individual STEM disciplines. High-quality STEM instruction should be inquiry-based and provide students with the ability to analyze and propose solutions to complex problems. A comprehensive STEM education prepares students not only to be literate in the specific disciplines but also to make connections between the disciplines. Making connections between the disciplines is key for students to determine the appropriate application of discipline-specific skills and concepts when facing the challenges of a continually evolving society.

STEM education requires adequate time, resources and instruction that includes engaging opportunities. STEM instruction must provide students time to investigate, question and solve complex problems. The Board believes that Connecticut schools must increase efforts to provide a comprehensive STEM education to all students.

Finally, the State Board believes that comprehensive K–12 STEM education is only realized through the incorporation of meaningful partnerships among STEM business and industry representatives, post-secondary educational programs, community colleges and universities, community organizations, families and school districts. Each of these stakeholders is necessary in order for students to understand the connections between their classroom work and skills required to be college and career ready.

Components of High-Quality STEM Education: Guidelines for Policymakers 2018

The Connecticut State Board of Education provides the following guidelines to support collaboration among the state's various stakeholders to build a high-quality, comprehensive, coordinated and culturally responsive STEM Education program for all Connecticut students, K–12. High-quality STEM Education instruction should be content rich, inquiry based, use standards across disciplines and provide for students to analyze and propose solutions for complex problems.

Department of Education's Responsibilities:

- Lead a statewide effort to increase the quality of and expand access to STEM education at the elementary, middle and high school levels.
- Encourage appropriate professional development opportunities for all Connecticut STEM educators.
- Require all STEM teachers hold the appropriate certificate for their assignment.
- Collaborate with higher education institutions, business, and industry to strengthen STEM skills in Connecticut students.

School Districts' Responsibilities:

- Provide safe, effective, STEM learning environments at all grade levels.
- Provide opportunity for teachers across disciplines to collaborate, plan, develop, and implement high-quality STEM lessons and activities.
- Provide meaningful professional development, resources, instructional materials and technologies to support STEM education.
- Ensure all STEM teachers hold the appropriate certificate for their assignment.
- Develop students' abilities to question, explore, observe, synthesize and draw conclusions based on their understanding of STEM related problems.
- Provide opportunities for students to explore STEM related careers.
- Encourage family and community participation in STEM events during and beyond the school day that promote the importance of STEM.

Families' and Community Members' Responsibilities:

- Support students' interests in STEM by encouraging them to speak about what they are learning at school and how this relates to daily life.
- Use community resources to support students' understanding of STEM.
- Work with teachers to support students' STEM engagement.

Higher Education Institutions' Responsibilities:

- Provide pre-service and in-service teachers with experiences that use relevant research in STEM education to support effective student learning.

- Provide pre-service and in-service teachers with opportunities to engage in meaningful STEM learning activities relevant to the full diversity of students and educational settings across Connecticut.
- Provide a collaborative process to align STEM educational programs and develop strategic partnerships between K–16.
- Partner with local districts to strengthen STEM skills for all Connecticut students using an active feedback mechanism to level expectations across K–16.
- Create new programs for pre-service teachers with a focus on STEM Education.

Business and Industry Stakeholders’ Responsibilities:

- Engage students, schools and families in community-based STEM activities to support and enhance STEM education opportunities.
- Develop ongoing, systematic partnerships with schools to support and enhance STEM education.
- Provide mentoring and internships for teachers and students.
- Actively sponsor, support, and participate in extracurricular STEM activities.

Other Educational Institutions’ Responsibilities (e.g., museums, teaching centers, etc.):

- Develop ongoing, collaborative partnerships with schools, teachers, students and families to support and enhance STEM Education.
- Provide STEM enrichment experiences for students, families, and educators before and after school, on weekends, during school holidays, and over the summer.