

Early Childhood STEM Education: Creating a Foundation for a Strong Future Workforce

The Problem

The growing demand for jobs in the fields of science, technology, engineering, and mathematics (STEM) requires a future U.S. workforce is prepared to fill the jobs of the future. Yet data shows we are not doing enough to train students in the skills they need.¹ Importantly, the achievement gap begins early in life, with disadvantaged students entering kindergarten already significantly behind their more affluent peers.² Part of the problem is that many early childhood practitioners feel “unprepared” to teach STEM to their students, making professional development programs crucial in training them to do so.³

The Solution

Beginning STEM education as early as possible is key to future success in STEM fields. Studies have shown that simple, age-appropriate activities, like building a tower or bridge of blocks or playing at a water table, can help encourage STEM learning.⁴

Numerous studies have highlighted the benefits of quality early childhood education. The Learning Policy Institute, for example, reported in 2015 that students who participated in early childhood programs received higher scores on third-grade standardized math assessments than their peers who did not participate. Studies have also shown lower high-school dropout rates among children who participate in early childhood education programs, showing that the positive results continue for many years. STEM lessons also help support skills like resourcefulness, persistence, and problem-solving ability—all crucial to the 21st century workforce.

The Legislation

Establishes a competitive grant program under the jurisdiction of the Department of Education to provide assistance for early childhood STEM programs and teacher training that meet certain requirements. The grants can be used by local and state educational agencies, non-profit providers of early childhood services, and institutes of higher education. Priority will be given to programs affiliated with institutions of higher education.

Grant funds can be used for the purchase of materials and equipment, enrollment in professional development programs, and to establish partnerships with institutes of higher education, among other uses. Funds may also be used to administer professional development and training programs.

Some examples of ongoing efforts that would benefit from this grant program include New Hampshire Technical Institute’s (NHTI) Child and Family Development Center, which operates a lab school for children ranging in age from infants to kindergartners in which STEM is a critical part of the curriculum; and the Wolf Trap Institute for Early Learning Through the Arts, whose artists-in-residence bring STEM into the classroom through curriculum-aligned creative and performing arts activities.

Additionally, the Boston Children’s Museum, public television station WGBH, and utilities provider National Grid developed STEM Sprouts, a curriculum for children ages three through five. Their teacher guide provides sample classroom activities to introduce students to basic STEM concepts.

¹ Bureau of Labor Statistics, 2015

² Stanford CEPA, 2015

³ University of California-Berkeley Center for the Study of Child Care Employment, 2014

⁴ National Association for the Education of Young Children, 2016