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The Evolution of a Game-Changing Acronym: Why Government Recognition of STEAM is Critical

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A research assistant works on organizing the STEMtoSTEAM network. Photo: David O'Connor

Back in the 1990s, federal investments in Science, Math, Technology and Engineering were conveniently bundled to make SMET. The [National Science Foundation \(NSF\)](#) led the charge, mandated to provide access and support for an increasingly diverse population in the “...attainment of SMET degrees, workforce entry and research participation.” An advisory committee to NSF, the [Committee on Equal Opportunities in Science and Engineering \(CEOSE\)](#), put it this way: “In order to maintain its global leadership, America must ensure [all] our citizens can meet the demands of a more scientifically – and technologically – centered world,” including “... fostering the national science and engineering workforce more broadly.”

Then some smart person at the NSF decided on “STEM”—same concept but a less “smutty” sounding alternative. Like SMET, STEM refers to the fields of Science, Technology,

Engineering and Math. It does not necessarily imply cross-disciplinary interaction, although there is a push for “integrative STEM education” that looks to a broader application of technology in education. Generally, STEM education exists to support our nation’s readiness in STEM fields, and it all comes down to US competitiveness and maintaining a position of global leadership. A follow-up report issued by the National Science and Technology Council in 2011 showed 2010 federal agency investments in STEM totaling \$3.4 billion. CEOSE has called for even greater support for equal access to STEM education opportunities, citing among other findings that in 2010, only 10% of both the African American and Asian and Pacific Islander populations were conferred advanced STEM degrees.

Enter STEAM – adding Art and Design to STEM – an integrative approach to education and research that industry support and arts education research is beginning to show will advance US capabilities in innovation and exportable knowledge. Programs at the NSF such as the Informal Science Education (ISE) program have seen an increase in funding – in the case of ISE, from \$4.6 million to \$34.6 million between 1984 and 1994 – and are now making exploratory investments in STEAM. A recent study issued by the [National Endowment for the Arts \(NEA\)](#), “The Arts and Achievement in At-Risk Youth: Findings from Four Longitudinal Studies,” found a correlation between arts engagement and high performance on science and writing tests.

STEAM is unquestionably gaining traction as a movement in governmental and research circles. House Resolution 319, introduced by Representative Jim Langevin (D-RI), “expresses the sense of the House of Representatives that adding art and design into federal programs that target Science, Technology, Engineering and Math (STEM) fields encourages innovation and economic growth in the United States.”

Government agencies are also acknowledging that collaboration between art and science – two areas that have, over time, become divided– can result in innovation that may not otherwise be possible without the thinking that happens when both disciplines come together. In a sense, the whole becomes greater than the sum of its parts. Among recent investments in exploring the idea of STEAM, the NSF funded a series of workshops, one of which took place at [RISD](#), that sought to develop new frameworks for Art/Science pedagogy. From the other side of the spectrum, The NEA has made a major push around what they call ArtScience initiatives, including hosting an event this June about the intersection of art, science and technology.

Whether today’s generation goes on to become lawyers, doctors, artists or politicians, we know that the many challenges they will face will require unconventional solutions.

The public’s growing recognition of the great power of creative thinking to produce positive outcomes with economic impact, and government’s acknowledgement and support of this, is critical. Collaborative efforts in STEAM areas in research, education, policy and beyond will sustain America’s foothold as a global leader in innovation.

Babette Allina is an artist and research policy expert at RISD where she serves as director of government relations. Previously, Allina worked to develop funding for large-scale life-sciences research at the [University of Rhode Island](#), spanning agencies that include the NSF, [DoD](#) and [DoE](#). In her artwork, Allina explores the intersection of art and science, most recently visualizing the efficacy of pharmaceutical inhibitors to arrest bacterial growth.

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