

STEM
EDUCATION
COALITION
Science Technology Engineering Mathematics

The central mission of the STEM Education Coalition is to inform federal and state policymakers on the critical role that STEM education plays in U.S. competitiveness and future economic prosperity and to advocate for policies that will improve STEM education at every level. This document details a range of “Core Policy Principles” that the Coalition embodies and seeks to implement.

Leadership Council Members

The STEM Education Coalition is an alliance of more than 500 business, professional, and education organizations as affiliate members. Our Coalition's Leadership Council, listed below, sets the policy agenda and overall objectives for the group and plays an active role in direct advocacy with policymakers.



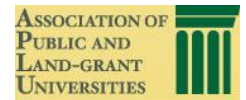
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Statement of Core Policy Principles

- STEM education must be elevated as a national priority as reflected through education reforms, policies to drive innovation, and federal and state spending priorities.
- STEM education is closely linked with our nation's economic prosperity in the modern global economy; strong STEM skills are a central element of a well-rounded education and essential to effective citizenship.
- Our nation must expand the capacity and diversity of the STEM workforce pipeline to prepare more students for the best jobs of the future that will keep the U.S. innovative, secure and competitive.
- Policymakers at every level must be informed about policy issues related to STEM education and their implications for the economy, national security, and continued American leadership in science and technology.
- Effective policies to promote STEM education as a national priority should be bipartisan and evidence-based and must be backed up by a strong and united community of stakeholders and advocates in the business, professional, research, and education communities.



Core Policy Recommendations

K-12, Higher Education, and Workforce Reforms

The Coalition supports:

- Inclusion of student performance in science alongside math and reading as a required element of K-12 educational accountability systems.
- Robust dedicated support for effective STEM educator professional development and preparation, including targeted efforts to promote STEM subject master teachers and teacher specialists.
- Comprehensive efforts to expand the capacity and diversity of the STEM workforce pipeline, including targeted initiatives to promote the inclusion of underrepresented minorities, women, veterans, and rural populations in STEM fields.
 - Initiatives to attract and retain talented and effective STEM educators from all backgrounds and to retain STEM undergraduates generally.
- Ongoing collaborative multi-state efforts to develop high-quality college and career ready standards in STEM fields.
- An inclusive definition and use of the term “STEM education” by federal and state programs that is not limited to only math and science, but also embraces engineering and technology, and broadly encompasses related STEM fields and their unique needs.
- A balanced approach to the use of both competitive and formula-based funding mechanisms to promote STEM-related educational innovation activities.
- Establishing a high-priority for STEM-focused projects, programs, and curricula in education programs that support classroom teaching and learning and out-of-school experiences such as afterschool, co-curricular, and summer programs.



- Inclusion of informal education as a strategy for enhancing and improving STEM education.
- Development of a rigorous education research base to inform innovations in teaching, learning, and educational materials development.
- Expansion of the capacity of community colleges to prepare students for further STEM education and for the STEM workforce.
- A strong emphasis on hands-on, inquiry-based learning activities, such as learning about the engineering design process, working directly with STEM professionals through internships, and participating in field experiences and STEM-related competitions.
- Integration and alignment of K-12 and higher-education programs and initiatives with workforce needs.
- Public-private partnerships and incentives that promote business and industry engagement in STEM education activities at every level.



Investments in Federal STEM Education Programs

The Coalition supports:

- Comprehensive and strategic efforts to coordinate, evaluate, and review all federal STEM programs on a regular basis to ensure that effective programs are scaled up and that underperforming programs are improved or eliminated.
- Higher prioritization for funding of STEM-focused programs at the U.S. Department of Education.
- Robust and sustained investments in STEM-related educational research and innovation programs, including full funding of the National Science Foundation's Education and Human Resources Directorate.
- High-quality programs conducted by other science and technology federal mission agencies that have positive impact on student achievement in STEM subjects and other educational outcomes.
- Integration of STEM-focused activities in federal programs directed at learning environments outside the K-12 classroom, such as afterschool and summer community based programs through universities and other higher education entities.



Prioritising **STEM** education



James Brown

Executive Director
STEM Education Coalition

Creating a strong and dynamic STEM workforce that can successfully compete in the 21st Century workplace is an important priority for the Coalition. Executive Director **James Brown** discusses how the organisation is working with policy makers, and other stakeholders, to address STEM education needs at all levels

Could you introduce the Coalition, highlighting its current objectives and the reason for its inception?

The STEM Education Coalition is a broad alliance of education, business and professional organisations from across the US that are united in the goal of promoting policies to improve STEM education at every level. Our Coalition closely follows the development and evolution of policies across the Federal Government that seek to address the challenges our nation faces in educating the future STEM workforce. We believe STEM education must be elevated as a national policy priority as reflected through education reforms, policies to drive innovation and budgetary priorities.

How has the Coalition evolved over the past year?

We have continued to grow as a group and a movement and have almost 600 members from across the country. Our Coalition's Leadership Council – the group that helps guide our agenda and activities – now stands at 34 members and has strong and diverse representation from every sector of the STEM stakeholder community. Over the past year, we have also broadened our engagement into more areas of education and workforce policy. For example, we have become highly engaged in supporting several STEM education proposals that were raised during the course of the major immigration policy debate that occurred early last year.

What are some of the challenges facing STEM education/educators? How is the Coalition addressing these issues?

One of the biggest emerging topics in education is how the state education departments deal with the implementation and roll-out of new common core standards in mathematics. New science standards are also in the works, having been developed along a similar model a few years behind the mathematics standards. These developments are changing how educators teach mathematics and science – and engineering, which is included in the science standards for the first time. They are also changing how technology will be employed in schools. All of these issues are creating renewed interest in federal education policies in the STEM area, as Congress deals with proposals to reauthorize our major federal education laws, many of which are long overdue for an overhaul.

Which groups are most lacking access to STEM education and careers?

The focus of debate around STEM education issues has shifted over the last five to 10 years from a focus primarily on the PhD-track scientists and researchers, to a much more well-rounded debate about how the STEM fields permeate so many different aspects of the modern workforce. STEM jobs are everywhere now. Technicians – from auto mechanics and nurses to welders – now need in-depth training in mathematics, engineering and technology to qualify for the best jobs in their areas. Literacy in the STEM subjects is becoming an accepted aspect of being an effective citizen of the 21st Century. This broadening of interest in STEM skills has renewed the debate about equity and opportunity in education at every level, especially when there are many groups that have disproportionately low representation in STEM fields, such as women and minorities.

The improvement of STEM learning is a core activity for the Coalition. How are you achieving this goal?

Our focus is on improving federal and state policies that influence education. We continue to fight for elevating science alongside mathematics and reading as a national priority in educational accountability frameworks. We are trying to work with the Obama Administration to chart a better direction for the use of more than \$3 billion in federal funds directed at STEM education activities that are scattered across more than 200 different programmes at over a dozen

federal agencies. We are also pushing for better alignment of education programmes to the changing needs of the modern workforce. None of these are easily or quickly achievable goals, as the legislative process moves slowly, so we have a very long term outlook in our efforts.

Does the Coalition create or inform federal and state policy relating to STEM education?

That's one of our core missions. We try to make sure that the collective expertise and input of the STEM education community are reflected in the policy decisions made by the Administration and Congress that affect these issues. In this regard we work with Members of Congress in both the House and Senate on a regular basis to ensure that they are well-educated on STEM policy issues and that the policies they consider and promote are focused on the right goals. Effective policies to promote STEM education as a national priority should be bipartisan and evidence-based and must be backed by a strong and united community of stakeholders and advocates in the business, professional, research and education communities.

In what ways can STEM education ensure US competitiveness and economic success? How does the Coalition raise awareness of STEM teaching, training, capacity and diversity as a national priority?

STEM education is closely linked with our nation's economic prosperity in the modern global economy and strong STEM skills are a central element of a well-rounded education. Accordingly, STEM education must be elevated as a national policy priority as reflected through education reforms, policies to drive innovation and budgetary priorities. More precisely, our Coalition feels strongly that action on STEM education policy should match the rhetoric on its importance.

Our nation must expand the capacity and diversity of the STEM workforce pipeline to prepare more students for the best jobs of the future that will keep the US innovative, secure and competitive. While the collected fields that make up STEM are clearly connected with future economic growth, and the job market for people with these skills is relatively strong, it is also important to point out that the STEM fields are not a monolith – policies to strengthen the US STEM education pipeline must be flexible and adaptive to a rapidly changing educational and workforce landscape.

With whom are you collaborating both nationally and internationally?

The Coalition works with many different partners on US education policies, including a variety of different state-based groups that are encountering STEM education challenges on the ground in their communities. Making sure we are well informed about the challenges that educators, students, parents and employers are facing is essential to being good advocates for education reforms. We also regularly interface with institutions like the National Academy of Sciences and the National Science Foundation, who are engaged extensively in studying emerging challenges in STEM education.

The Coalition primarily focuses on education in the US, but I also make it a priority to meet with a variety of international educators when they visit the country and have them study our system. Through a programme at the US Department of State, I really enjoy meeting and talking with educators from around the world about the issues we face. It's amazing how similar our challenges are and how much we can learn from one another.

How do member organisations support your work? What message would you like to give to prospective members?

The most important way our members support the Coalition is by lending their voices to amplify our advocacy efforts. The 30+ members



of the Leadership Council also provide financial support for our work and contribute their expertise to the development of our policy agenda. It is truly a privilege to be part of a group that is so incredibly diverse, but also so united in the common goal of improving STEM education to keep the country prosperous and secure. If you have an interest in improving STEM education and strengthening our workforce, you should join our Coalition. We certainly need to bring more voices to the table if we are to succeed.

What more can be done to engage children and youth in STEM learning? How might, for example, afterschool and summer learning programmes attract more young students to participate in STEM subjects?

The whole afterschool and informal learning arena is an area where policy makers need to spend a lot more attention. We have been strong supporters for the inclusion of informal learning as a strategy for enhancing and improving STEM education. Where we really face difficulties is in providing high-quality experiences for students to become inspired in these areas in our most struggling schools. For the most part, our really great schools do a fine job of providing students with excellent learning opportunities both inside and outside the classroom. But in high-need schools – so often the ones that serve poor urban, rural and diverse communities – there is a lot of room for improvement and innovation, especially in the STEM fields. This is where the most interesting and most impactful challenges are – in finding ways to best prepare the children in the toughest learning environments for the jobs of the 21st Century that will help them realise the American dream.

As the Executive Director, which direction are you hoping to lead the Coalition over the next few years? What do your responsibilities include, and how have your professional experiences prepared you for this role?

I originally began my career as an engineer, so I am really proud to be involved in promoting STEM education at the national level. Our biggest

challenge is in capitalising on the growing awareness around STEM education issues in a way that translates that interest into concrete changes in education policy. While it is relatively easy to talk about the broad challenges we face around US competitiveness and STEM education, it is much harder to construct reasonable policy solutions. Our Coalition certainly appreciates this challenge and shares the responsibility to develop and support policies that will give the country the vibrant and diverse STEM workforce it needs.

Where are you focusing your research efforts in 2014?

For the last several years, much of the focus of policy makers in Washington, DC has been on policies related to K-12 education, both primary and secondary. I expect that 2014 will see the return of a strong focus on higher education and the need to address growing public concerns over the rising cost of college tuition. At the end of 2013 we saw Congress working to address the overall budget and spending issues that have created so much political deadlock in recent years. America needs to return to the business of strengthening our public institutions, which are all built on the foundation of an excellent education system.

www.stemedcoalition.org

