



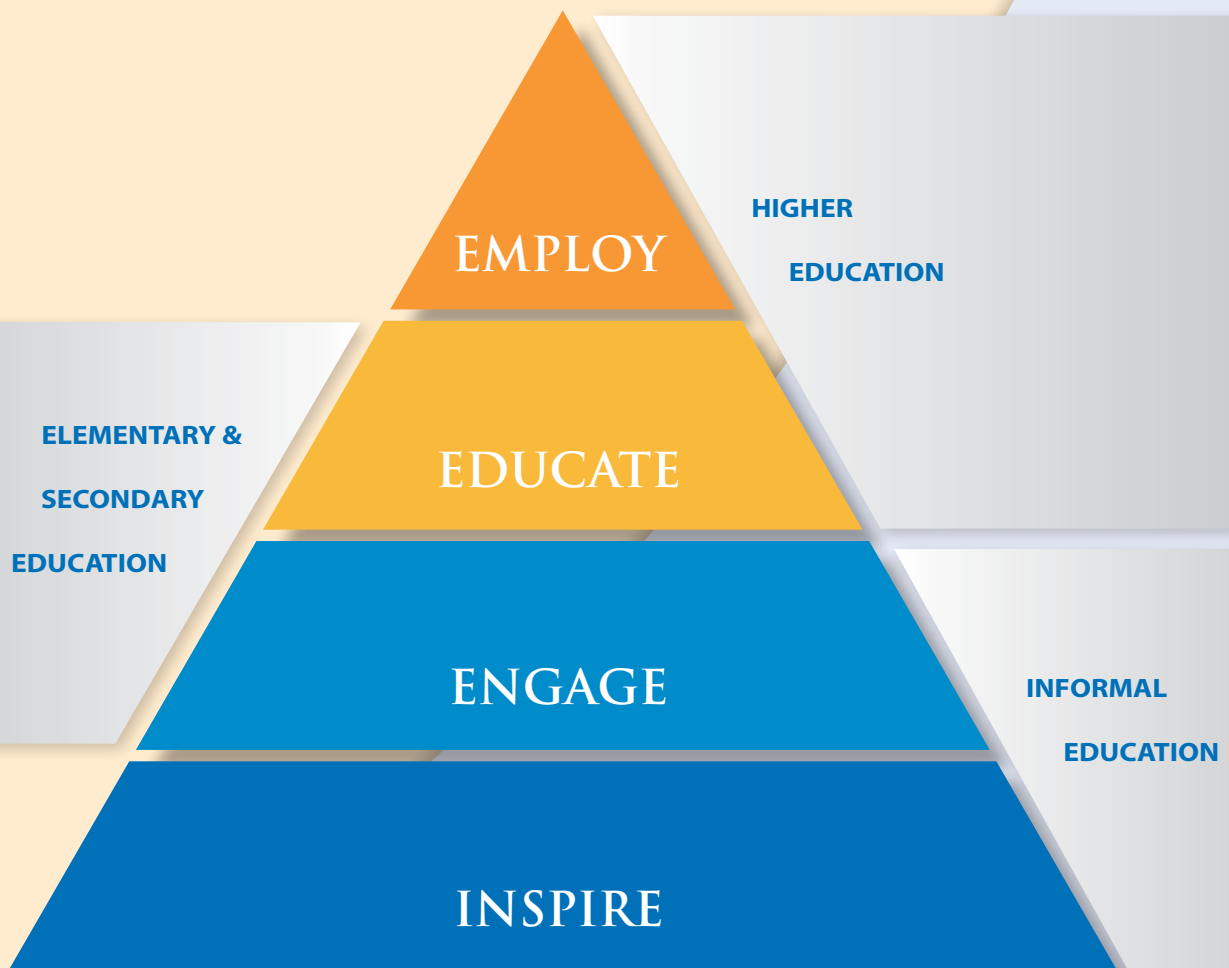
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RECOMMENDATIONS

The recommendations on the following pages build upon an analysis of the most cited national and state STEM reports, the three STEM CAP forums convened by the California Space Education and Workforce Institute and the STEM CAP focus group data. In order to achieve a measurable impact, recommendations need to be implemented statewide for all regions.

STEM CAP uses as an organizing principle for its recommendations the NASA Education Framework illustrated below, which was shared by NASA education stakeholders participating in the STEM CAP and adopted by the STEM CAP Advisory Group.

http://education.nasa.gov/pdf/151156main_NASA_Booklet_final_3.pdf



Courtesy NASA



“While teacher recruitment and retention is a major factor, sharing the passion of science, sparking the inspiration, encouraging engagement and educating by tapping the natural curiosity of learners is of equal importance.”

— NASA Education Framework: Inspire, Engage, Educate, Employ

INSPIRE

- 1 RECOMMENDATION:** Motivate students and adults, using a variety of incentives, to study and enter STEM careers, with a special effort geared to those in currently underrepresented and underserved groups.
- 2 RECOMMENDATION:** Build public support for and understanding of the value of STEM education for all students and citizens.

ENGAGE

- 3** **RECOMMENDATION:** Provide rigorous, relevant Career Technical Education (CTE) that prepares students for both higher education and the workplace in order to reinforce classroom instruction and provide tangible relevant skills for greater subject matter retention and competency.
- 4** **RECOMMENDATION:** Deliver science and math curriculum that motivates, energizes, reinforces and rewards the natural curiosity and interest students initially bring to the subject.

“Our ability to remain globally competitive as a state depends especially on our capacity for scientific and technical innovation. This in turn depends on our ability to engage students at a young age in the study of science and mathematics and to encourage them to embark upon college and university programs in STEM disciplines.”

— Dr. Warren J. Baker, President, California Polytechnic State University



Courtesy: Lorry Lim/STEM teachers at MESA professional development institute



“Studies report that the interest levels of American students, especially girls, in science begin to drop around middle school. As factors in turning off high numbers of students to STEM disciplines and professions, researchers point to the artificial separation in the curriculum of natural phenomenon into subjects, the focus on natural sciences and lack of attention to the human-made world of engineering and technology, and the disconnect of coursework from the lives of students.”

— *Building a Science, Technology, Engineering and Math Agenda*

EDUCATE

- 5 RECOMMENDATION:** Align state K-12 science and mathematics standards and assessments with postsecondary and workforce expectations of what high school graduates should know and be able to do.
- 6 RECOMMENDATION:** Implement a comprehensive package of recruitment strategies for mathematics and science teachers throughout grades K-12 to expand and diversify the pool of fully prepared and certified candidates.
- 7 RECOMMENDATION:** Strengthen teacher preparation programs in mathematics and science through inclusion of hands-on, problem-based instruction and strategies that will benefit all students including underrepresented and underserved students.
- 8 RECOMMENDATION:** Provide ongoing, research-based professional development programs, focused on both content and pedagogy, for all mathematics and science teachers and faculty K-Higher Education.

EMPLOY

9 RECOMMENDATION: Create Industry partnerships directly engaged with educators to deliver relevant, motivational and exciting instruction to reinforce and enhance STEM curriculum while setting the foundation for building a competitive and qualified workforce in tune with emerging work realities.

10 RECOMMENDATION: Create hands-on internships and fellowships for students, teachers & faculty with employers in industry, academia, informal science networks, and civic organizations.

Courtesy Lawrence Livermore Federal Laboratory



Courtesy Raytheon



"47% of high school dropouts said classes weren't interesting while 81% called for more 'real world' learning opportunities."

— The Silent Epidemic
A Report by Civic Enterprises
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