Addressing the STEM Teacher Shortage
Liana Heitin Loewus
Assistant editor, *Education Week*

Follow Liana on Twitter: @LianaLoewus
Where Recruiters Come for Top Candidates.
Where Jobseekers Come for Top Jobs.

TopSchoolJobs is your ultimate source for K-12 recruitment needs.

We offer:

- **Online job postings.** Recruit top talent with a 30 day job posting, or maximize your budget by buying unlimited job packages in bulk.
- **Online job fairs.** Regional and national options including subject specific job fairs or general events open to all K-12 professionals seeking teaching or admin jobs.
- **Digital and print opportunities.** Ads on Education Week sites and/or publications or email blasts to the Education Week and TopSchoolJobs’ audience.

[Learn more, click here.](#)
Addressing the STEM Teacher Shortage

Expert Presenters:

Michael Marder,
Executive director
UTeach STEM teacher preparation program
University of Texas at Austin

Jim Ryan
STEM executive director
San Francisco Unified School District
An on-demand archive of this webinar will be available at www.edweek.org/go/webinar in less than 24 hrs.
STEM Teaching Shortage

A perspective from higher ed

Michael Marder
UTeach and Department of Physics
The University of Texas at Austin
Two Views of Shortage

AAEE Shortage Report, 5 highest shortage

- Special Ed: 4.5-4.6
- Physics 4.5
- Speech Pathology 4.4
- Math 4.4
# Two Views of Shortage

## Schools and Staffing Survey (2012)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number of Teachers</th>
<th>Percent with no major in main assignment or not certified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>144,800</td>
<td>38%</td>
</tr>
<tr>
<td>Science</td>
<td>126,300</td>
<td>27%</td>
</tr>
<tr>
<td>Biology</td>
<td>51,900</td>
<td>35%</td>
</tr>
<tr>
<td>Physical Science</td>
<td>64,600</td>
<td>62%</td>
</tr>
<tr>
<td>Chemistry</td>
<td>24,300</td>
<td>66%</td>
</tr>
<tr>
<td>Earth Sciences</td>
<td>12,400</td>
<td>68%</td>
</tr>
<tr>
<td>Physics</td>
<td>13,300</td>
<td>63%</td>
</tr>
</tbody>
</table>
Shortage is Actually More Severe

40% of US high school students take as much as 1 year of physics – but in Asia and Europe, they usually take 4+ years of physics

*Nation at Risk* recommended all students take at least half a year of Computer Science – but less than 25% of US high schools offer it at all, and only 10% offer AP CS

Computer Science dominates projections for US STEM job growth – but over 60% of Master’s level workers in CS were born and educated through high school abroad
Teacher Production Overall is Falling

Teacher preparation program completers 2010-2015 for highest-producing states.

Program Type
- Alternative, not IHE-based
- Alternative, IHE-based
- Traditional


2010-2015 for highest-producing states.
Texas, nation’s largest producer, has explored non-university solution...
...leading to lower STEM teacher production than 15 years ago
But there is hope ... around half of US STEM majors indicate some interest in middle or high school teaching...

(American Physical Society, Panel on Public Affairs, 2017)
...university-prepared teachers stay longer, cost less, and their students learn more...

Texas Teacher Retention for teachers entering from 2004 until 2013

Teacher Years in Classroom

Percentage Still Teaching

STEM, Standard Program

STEM, Alternative Program

U Teach graduates increase student learning.

(AIR/CALDER 2017)
...and high-quality programs are available to scale up across the country.
STEM Teacher Shortage in San Francisco

Jim Ryan, STEM Executive Director
Email: ryanj3@sfusd.edu
• 57,000 Students PK-12
• 4,000 Teachers
• 2,000 Teachers with STEM Responsibilities
Build the Pipeline

• San Francisco Teacher Residency
  – USF
  – Stanford
  – United Educators of San Francisco

• NYU Teacher Residency
  – Embedded Masters in Teaching

• Trellis: Building Master Teacher Capacity
  – Partner with university student teacher placement
Build the Pipeline

• SFUSD as an accrediting institution
  – Paraprofessional career ladder
  – Individuals who have shown commitment to staying in SFUSD

• Identify teachers in non-STEM subjects who are STEM curious
  – Support them in pursuit of a STEM subject credential

• SFUSD and SFSU NSF Includes Grant
  – Support SFUSD teachers and expose SFSU students to teaching
Reduce the Churn

• Curriculum, Coaching, and Professional Development
  – School sites as units of change, rather than individual classrooms
  – Curriculum that grows and adapts with teachers
  – Professional Development that require collaboration and community
  – Reduce sense of isolation
Reducing the Churn

• Support for newer teachers
  – All Teachers on Special Assignment are coaching young teachers through SFUSD’s induction programs

• New teacher professional development provided throughout the school year
TopSchoolJobs is your ultimate source for K-12 recruitment needs.

We offer:

- **Online job postings.** Recruit top talent with a 30 day job posting, or maximize your budget by buying unlimited job packages in bulk.
- **Online job fairs.** Regional and national options including subject specific job fairs or general events open to all K-12 professionals seeking teaching or admin jobs.
- **Digital and print opportunities.** Ads on Education Week sites and/or publications or email blasts to the Education Week and TopSchoolJobs’ audience.

[Learn more, click here.](#)
An on-demand archive of this webinar will be available at www.edweek.org/go/webinar in less than 24 hrs.
Addressing the STEM Teacher Shortage

Required Reading from *Education Week*:

**Spotlight on STEM in the Classroom**
In this Spotlight, explore inclusive STEM high schools, inter-district and museum resources for teaching STEM, how nanoscience lessons can engage students in science, and the civic importance of science instruction.