

Four Perspectives on the Nature and Effectiveness of STEM-Focused Schools

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History: Emergences of *Selective* Science and Math Schools for Talented Students

- U.S. public high schools have taken a comprehensive approach with the goal of serving all students, whatever their goals
- Around turn of 20th century, some states and school districts created selective public schools focused on science and math.
- Rigorous admissions requirements, usually a competitive exam
- Multiple models
 - Local
 - Residential
 - School-within-a-school



Representation in STEM Majors and Careers

- Total employment in science and engineering occupations is growing at a faster rate than employment in other occupations.
- Hispanics, African Americans and Native Americans comprise 26% of the U.S. population but just 10% of workers in science and engineering occupations.
- Among college-educated members of the science and engineering workforce, 6% are African American and 5% are Hispanic.
- Women comprise half of the college-educated workforce but just 13% of the engineering and 25% of the computer and mathematical sciences portions of this workforce.

New Development: *Inclusive* STEM-focused High Schools (ISHSs)



- Goal: Increase minority participation in STEM.
- Have “open” admissions, fewer requirements.
- Provide more intensive STEM learning experiences with goal of giving their graduates the foundation for a STEM college major

STEM High Schools: Specialized STEM Secondary Schools in the U.S. (Means et al., 2008)

- Used NCSSSMT and Gates Foundation records to identify STEM schools
- Survey of 203 schools (66% response rate)
- 55% of responding schools identified themselves as inclusive STEM-focused schools
- Most were stand-alone schools, but 38% were “school-within-a-school” and 20% were charter schools.
- Most were established after 1998

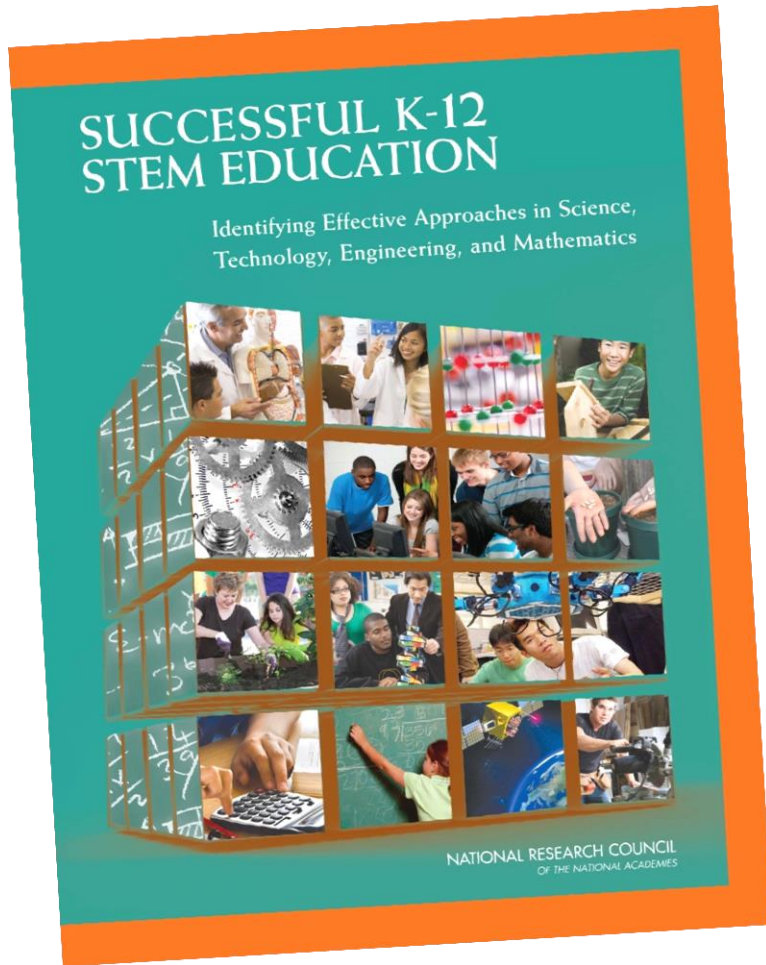
Inclusive STEM High Schools as a Strategy for Increasing Representation

- Students and their families choose to attend inclusive STEM schools.
- Students are selected primarily on the basis of interest; does not use examination-based entry; either most applicants are accepted or if oversubscribed, students are selected through some form of lottery (though representation may be a factor).
- Core program prepares students for postsecondary STEM majors.

More About ISHSs

- Typically small in size.
- Many are recently established either as stand-alone small schools or as a school-within-a-school in a larger high school
- New ISHSs often start with a 9th grade class and then add one class a year.
- ISHS vary in whether or not they have a curriculum focus, emphasis on integrating STEM subjects, or a particular instructional philosophy.
- *Some* ISHSs
 - have strong links to community partners
 - have elements of career technical education
 - are also Early College High Schools

2011 NRC Report



➤ Three types of specialized schools

1. Selective STEM schools
 - ❖ Mainly high schools that enroll small numbers of highly talented and motivated students
2. Inclusive STEM schools
 - ❖ Organized around STEM disciplines but without selective admissions criteria
3. STEM-focused CTE schools
 - ❖ Mainly high schools, aim to foster engagement and to prepare students for STEM-related careers

Panel Presentations

- Project Goals and Research Questions
- School Contexts
- Findings: Essential Features of These Schools
- Preliminary Findings: Impacts
- Panel Order
 - Melanie LaForce, University of Chicago
STEM School Study
 - Sharon Lynch, George Washington University
*Opportunity Structures for Preparation and Inspiration (OSPri):
Understanding Inclusive STEM High Schools*
 - Steve Schnieder, WestEd
Study of Selective STEM Specialty Schools
 - Barbara Means, SRI Education
*iSTEM: A Multi-state Longitudinal Study of the Effectiveness of Inclusive
STEM High Schools*