Research

**Study Finds 14 Common Traits for Strong STEM Outcomes**

* By [Sri Ravipati](https://campustechnology.com/forms/emailtoauthor.aspx?AuthorItem=%7B0CCD4642-095C-4ECD-9A5F-0D3890BB5621%7D&ArticleItem=%7B95CDA0B2-0B89-4B76-A8F3-C678DEFA1C44%7D)
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High schools that require STEM-focused college preparatory curricula and foster an inclusive school community and culture are best at equipping minority students with skills to succeed in STEM careers. Having well-qualified teachers with strong STEM backgrounds, including industry and research experience, also leads to stronger learning experiences for minority students.

These are some of the results from “[Opportunity Structures for Preparation and Inspiration](https://ospri.research.gwu.edu/),” a five-year study from [George Washington University](https://www.gwu.edu/), [George Mason University](https://www2.gmu.edu/) and [SRI International](https://www.sri.com/). The project, also called OSPrl, examined common traits among inclusive STEM high schools (ISHSs) that lead to strong STEM outcomes.

In contrast to highly selective STEM-focused high schools that target students who are already gifted in STEM, ISHSs “develop new sources of STEM talent,” the OSPrl website explains.

"Inclusive STEM schools aren't like most private schools, but are not really like traditional comprehensive schools either," Sharon Lynch, professor at George Washington's [Graduate School of Education and Human Development](http://gsehd.gwu.edu/) and principal investigator for the study, told [Phys.org](http://phys.org/news/2016-09-common-traits-account-strong-stem.html). "This is a new kind of school that is much more inclusive and is bringing in students who want to be there and study STEM, no matter their backgrounds. They have figured out how to do things differently, to trust their students to achieve and their teachers to guide students toward STEM college majors."

OSPrl identified 14 components that distinguish ISHSs from traditional high schools and from STEM-focused high schools without inclusive missions:

* College-prep, STEM-focused curriculum for all;
* Well-prepared STEM teachers with strong background in STEM;
* Support systems for underrepresented students;
* Flexible and autonomous administration;
* Reformed instructional strategies and project-based learning;
* Integrated, innovative technology use;
* STEM-rich, informal experiences;
* Connections with business, industry and the world of work;
* College-level coursework;
* Inclusive STEM mission;
* Dynamic assessment systems for continuous improvement;
* Innovative and responsive leadership;
* Positive school community and culture of high expectations for all; and
* Student agency and choice.

Using these data, the researchers assembled an online toolkit that provides a logic model and a guide for schools to assess their STEM education programs called the [STEM Inventory](https://ospri.research.gwu.edu/sites/ospri.research.gwu.edu/files/downloads/CC%20Inventory_FINAL.pdf). The toolkit has detailed case studies for the schools included in the study: [Manor New Tech High School](https://ospri.research.gwu.edu/sites/ospri.research.gwu.edu/files/downloads/OSPrI_Report_2013-01.pdf), [Wayne School of Engineering](https://ospri.research.gwu.edu/sites/ospri.research.gwu.edu/files/downloads/OSPrI_Report_2013-02.pdf), [Denver School of Science and Technology](https://ospri.research.gwu.edu/sites/ospri.research.gwu.edu/files/downloads/OSPrI_Report_2013-03.pdf), [Metro Early College High School](https://ospri.research.gwu.edu/sites/ospri.research.gwu.edu/files/downloads/OSPrI_Report_2014-01.pdf), [Metro Urban Science Academy](https://ospri.research.gwu.edu/sites/ospri.research.gwu.edu/files/downloads/OSPrI_Report_2014-02.pdf), [Gary and Jerri-Ann Jacobs High Tech High](https://ospri.research.gwu.edu/sites/ospri.research.gwu.edu/files/downloads/OSPrI_Report_2014-03.pdf), [Dozier-Libbey Medical High School](https://ospri.research.gwu.edu/sites/ospri.research.gwu.edu/files/downloads/DLMHS%20Case%20Study_FINAL%2012_18_2014.pdf) and [Chicago High School for Agricultural Studies](https://ospri.research.gwu.edu/sites/ospri.research.gwu.edu/files/downloads/Chicago%20High%20School%20for%20Agricultural%20Sciences%20Case%20Study_OSPrI%20Report%202015-01.pdf). In addition, the toolkit features “[A Day in the Life](https://ospri.research.gwu.edu/day-life-videos)” videos that offer a glimpse into the culture of ISHSs, as well as links to scholarly publications.

To learn more about the study and the toolkit, visit the [OSPrl site](https://ospri.research.gwu.edu/).

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