Creating a High Performing STEM School Culture

Background
DSST's (Denver School for Science and Technology) Stapleton High is the founding school in a network of public charter schools. DSST Public Schools currently operates five STEM open-enrollment charter schools, four middle schools, and two high schools, serving almost 2,000 students in Denver, Colorado.

Because we are charter schools, all of our students enroll through a non-selective, random lottery. As a result, our student body is very diverse: 50% of our students are low income and 70% are minorities. Our schools truly represent a cross section of Denver, the city we serve.

Documented Results
Last year, DSST Public Schools operated the highest performing middle school and high school in Denver. Within the state of Colorado, according to the Colorado Growth Model on the Colorado Student Assessment Program (CSAP) tests, our schools showed some of the highest growth numbers of all public schools. And at DSST: Stapleton High School, 100% of all five senior classes in the school's history have earned acceptances to four-year colleges. All of our students are prepared to study STEM-related disciplines in college, and we estimate that 40% of our students are choosing STEM fields after graduation.

Most importantly, DSST proves, without a doubt, that all students, regardless of race or income, can earn a rigorous STEM high school diploma and attend four-year colleges and universities. Preparing every student to succeed in a four-year college with the opportunity to study STEM is at the center of DSST's academic program. Our STEM program is centered on three pillars.

First, our schools are built on the premise that all students deserve access to a high-quality STEM education. A majority of DSST students enter well below grade level in the sixth and ninth grades and could never test into a magnet science program. Many students are conditioned to believe that science and advanced math "is an extra" and only for "smart kids." In our schools, these subjects are not extras, but core subjects for all students. All students have access to STEM college preparatory curricula.

Our second key belief is that schools must provide a rigorous STEM preparatory curriculum. We believe that the most important factor in a student choosing and ultimately completing a STEM degree is their preparedness to succeed at the college and graduate level.

Regardless of their starting point at DSST, all students are expected to pass three years of integrated science in middle school and more than five years in high school—and many students take more.Students take an algebra-based high school physics course in the ninth grade. This provides students with a lab-based class to practice, apply, and synthesize the math skills they are learning elsewhere. All ninth-grade students also take "Creative Engineering," where they learn the design process, how to conduct basic research, how to maximize and minimize constraints, and are hooked into engineering and the sciences as careers that improve the human condition. We are introducing an Engineering course in eighth grade this year that will increase the depth and rigor of engineering coursework in grades 8 and 9 by the end of next year. Students complete their high school requirements by taking a college-level physics class coupled with an engineering course or a college-level biochemistry class coupled with a bio-technology class. Math is also a critical component of a rigorous STEM curriculum. All DSST students are required to pass at least pre-calculus to graduate. In two years, we estimate that 85% of our students will pass calculus prior to graduation.

Lastly, we believe the success of any school must be rooted in a strong school culture that focuses on building character and creating an accountable environment that expects all students to be college ready. Students are challenged but supported in our schools. A peer-driven culture is reflected in each of our schools where going to college is cool and expected.

For More Information
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