Dreamers Challenge

Where Have All the Students Gone?

Submitted by:

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I am a senior in the International Baccalaureate program at a public high school. I have attended private schools, public schools, schools in France, and I have even been home-schooled. I hope to attend MIT in the fall, and my “Dream” is based on my experience there last year.
Where Have All the Students Gone?

“Space: the final frontier”… four words that started it all. It was 1998 as I sat watching Captain Jean-Luc Picard on the bridge of the USS Enterprise for the first time. I was only five, but from that moment on I knew what I wanted to do in life -- I wanted to explore space.

As I grew up, this changed from a dream to an achievable goal as I set my eyes on prestigious universities and began to have an increasing interest in physics. Throughout all of high school I took every opportunity available to me to learn and achieve my ultimate goal. However, one can only go as far as the opportunities available allow.

The PROBLEM:

During my sophomore year of high school I began, along with all my peers, to fill out my desired classes for the next two years. I attend Granite Hills High School specifically to participate in the International Baccalaureate (IB) Program, an internationally recognized curriculum that offers “an advanced, comprehensive program of study with an emphasis on meeting the challenges of living and working in a global, technological society.”

On the list of courses was “Higher Level Physics”, a two-year IB course studying physics, and I signed up. When I received my schedule I was informed that the class was canceled due to an insufficient number of students -- the school needed 25 in the class and less than 15 signed up. I began to wonder: in a public school of almost 3,000 students, how can there be less than 25 students motivated enough to take a two-year physics program?

My school, declared an International Baccalaureate school, has only 31 IB diploma candidates: 1.1% of the total students. How can a school with such a large population have so few students who want to take challenging courses? Why is the school turning away new students due to overcrowding when my AP and IB classes are often half empty? Are we dumbing down … or simply not encouraging looking up?

In the companion book to the film, Waiting for Superman, the editor, Karl Weber, and author, Participant Media, cite several facts about “America’s failing public schools”:

- Among 30 developed countries, the United States is ranked 25th in math and 21st in science.

- By the year 2020, 123 million American jobs will be high-skill/high-pay occupations in science and engineering, but only 50 million Americans will be qualified for them.
• In 1970, the United States produced 30 percent of the world’s college graduates. Today it produces only 13 percent.

• Since 1971, spending on education has gone from $4,300 per student to over $9,000 per student after adjusting for inflation. Yet, during this period, math and reading test scores have remained the same in the United States while rising in virtually every other developed country.

American students are falling behind in all subject areas, and they lack the intrinsic motivation to demand more from the public school systems that are limiting them.

The IDEA:

People talk about school systems, educators, families, communities…I have another idea. My idea is to start with the students -- middle-school students. I want to create a new generation of high schoolers, a generation of self-motivated learners, a generation like our forefathers with a love of learning, exploring, understanding -- because our human curiosity is excited by it and our future requires it. If we can create a ‘demand’ for additional educational opportunities from the students themselves, then the schools will likewise listen.

If we can show students how to make a computer program unbeatable at tic-tac-toe using C programming…

If we can show students how to predict exactly where a fired cannonball is going to land using physics…

If we can show students how to build a four-foot cantilever made of only rulers and playing cards through structural analysis…

If we can show students how to mathematically prove 0.999... is exactly equal to 1…

…then maybe we might catch their attention for once. We might start a spark -- a bright discharge of electricity; a factor that sets off or acts as a stimulant, inspiration or catalyst. Maybe students will actually want to learn rather than being stuck, bored, for seven hours a day in what is cynically called ‘free babysitting.’

What if this year’s junior and senior IB students could light a fire in the minds of younger students -- as only other students can? What if we can get the students to keep asking for more math classes, more science classes, more AP/IB classes, more, more, more…? What if students wanted to go to school everyday? What if physics was fun?

I found out it can be, and my dream is to get other students excited about math and science as well.
Every spring, students at MIT host an event through their Educational Studies Program (ESP) for middle- and high-school students called Spark. “The MIT ESP is a group that organizes classes taught by college students, for middle- and high-school students. Our Motto is ‘Teach Anything, Learn Anything’; our goal is to instill excitement for both learning and teaching.” (http://esp.mit.edu/about/welcome.html)

I was fortunate enough to attend the Spark program last spring, along with hundreds of other students, and I came back with a renewed enthusiasm for math and science. I was dying to share everything I learned with anyone who would listen. I wanted other students to experience this feeling and apply it to their own educational goals.

The GOALS:

My goal is to instill the same desire for learning, which was created in me, in every single student who walks onto the Granite Hills campus next year. With a desire for new curriculum, new classes will be created and understanding will increase exponentially. At my school I plan to never again have a student’s dreams and enthusiasm crushed due to lack of student interest. With an increased interest in learning comes higher scores, grades, graduation rates, college admissions… and the upward spiral never ends.

I plan to motivate middle-school students to take challenging courses and gain a desire for learning. Ultimately this will expand our IB program and allow for all students to pursue their own personal dreams. I do not want the next ambitious future astronaut, mathematician, chemist or rocket-scientist to unnecessarily miss an educational opportunity.

The PLAN:

Using my experience and the MIT ESP as a model, I put in motion the plans to start a “Spark” program of our own at Granite Hills. I discussed my idea with my supervising teacher, Mr. Matthew Davis. He also got excited about the idea and immediately approached a teacher at nearby Montgomery Middle School. They are meeting again next week. We are now planning a late-January date for the event.

The program will be a one day event, hosted annually, where middle-school students can come on campus to prepare for high school and gain interest in specific subject areas. The middle-school students will sign up for as many or as few one-hour classes as they want, scheduled throughout the day, on a variety of subjects.

Current IB students will work alongside IB teachers to develop class plans and lessons tailored specifically for middle-school students based on subject areas they themselves are most interested in or passionate about. The IB students will then teach these classes … and spark the imaginations of incoming middle-schoolers. Teachers who have a passion for their work share that passion with their students. Classes will be
created to peak the students’ interest and reveal subjects that they may have never known were related to high-school classes. Courses might cover topics such as:
* The Physics of Explosions!
* Black Holes and Time Travel
* Programming Your Own Video Games
* Backyard Engineering: Duct Tape!
* How to Argue
* Why Everything You Learned In Math Class Is Wrong
* How to Bet... And Win, With Probability
* How to Stargaze Like a Professional
* The Science of Baking
* How To Shoot Lasers... In a Movie

... and virtually any other fun class imaginable. All classes will be directly related to on-campus courses actually offered so that middle-schoolers are intrinsically motivated to learn from Day One and have the opportunity to do so.

Next comes the creation of lesson plans and course outlines. Each IB student will work individually with an IB teacher to create a personal lesson plan for a one-hour course. The classes will have demonstrations, hands-on experiments, and engaging class work that will excite students and get them thinking. Students understand how students learn best, and thus we will use our understanding as students to excite and engage the middle-schoolers.

Through the high school, we’ve already applied for a $25,000 grant from Microsoft for initial funding. I made a presentation to board members of the regional Chamber of Commerce last year, and its Business Education Committee is exploring additional funding opportunities for us. Eventually, as the IB diploma program grows bigger, so will the event, drawing more students in and allowing a greater number of students to discover what truly motivates them.

Finally, it will be advertised and available at no cost to multiple middle-schools so that students from all over can discover their own personal strengths and desires. I plan to return to Granite Hills as often as I can to keep this program alive, even after I have graduated, in an effort to incite the incoming classes with the same enthusiasm that gripped me.

**The SUMMARY:**

The problem is a nation-wide failing public school system that is letting down untold numbers of students and hindering future generations of the United States in all respects. The answer is to get students engaged in their own education so that they are motivated from within. *They will push schools to teach them* instead of the other way around.

Robert Maynard Hutchins (1899-1977), former dean of Yale Law School and president of the University of Chicago, said, “The objective of education is to prepare the young to
educate themselves throughout their lives.” He didn’t say spoon-feed them or teach to the test, or that learning had to be boring to be educational. The tagline from the movie, *Waiting for Superman*, is: “The fate of our country won’t be decided on a battlefield, it will be determined in a classroom.”

My plan to implement a “Spark” program for middle-school students will allow them to learn information beyond the realms of traditional study. Students are not motivated by how momentum is transferred between two rolling balls, they are motivated by explosions. If students learn how a firework “works”, then they will crave more information in all realms of physics.

My dream is to inspire students to solve world problems and change the world themselves through a new kind of learning. By lighting a “spark” at my own school, I hope to eventually expand the event to the district, and hopefully beyond. It is not just about a single day’s event, it is about inspiration and creating desire in students. If even one more student joins the IB program, takes one more AP class, decides physics is not so bad… then my dream comes true.

Who knows which student might be inspired to solve world hunger, global warming or sustainable energy once and for all? We’re going to change the world, starting with the Spark program at Granite Hills High School.