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TechScape: Dean Kamen & FIRST ... Perhaps His Greatest Invention

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Part Two of a
three-part
series with
Dean Kamen

(Part One on
Dean Kamen
is available
[here.](#))

This second part is about the amazing, selfless and absolutely crucial organization for the education of kids, FIRST [For the Inspiration and Recognition of Science & Technology]. This incredible non-profit brainchild of Kamen brings together technology companies as sponsors and finances kids making competitive robots while the children learn Mathematics, Science, Engineering & Technology.



FIRST®

*Igniting young minds. Nurturing passions. Practicing
Gracious Professionalism™*

*"Our Vision: ... to transform our culture by creating a
world where science and technology are celebrated
and where young people dream of becoming
science and technology leaders." Dean Kamen,
Founder.*

I had never heard of [FIRST](#) before [Dean Kamen](#) mentioned it to me. There's no doubt that his passion--one man's vision--has created something very special. The more I've learned about it and seen the incredible effects

and transformations in the young people who are drawn to it; the more passionate I've become myself. It's been an unbelievable experience for me to witness this great social and educational dynamic.

Now, this special thing that Kamen created is **really special**. There are things that are special and there are things that are very special, like FIRST. Providing mind-challenging and inspirational programs for kids age 6 to 18, FIRST is training wheels for young minds.

My own experience in writing this part of Kamen's story was an emotional epiphany for me. I found myself welling up at several points when talking to FIRST kids or hearing of how far they've come. It felt so good for me to see just how good this old world of ours can still be in spite of all our trials and tribulations. Any pessimist who tells you otherwise should have their head examined or be promptly referred to get involved in FIRST.

The results of a lifestyle, and a life like a kid being in FIRST are not just educational. Nor are they just career training, technology, software programming, AI (artificial intelligence), engineering, communications, leadership, management, sportsmanship, persistence, ethics, philosophy, business, relationships or family ... but somehow, amazingly, it is about all these things simultaneously; and they're all wrapped up into an over-arching cocoon of creating community.

Though FIRST sprang forth from Kamen's fertile imagination initially to improve America's educational system and give US kids a path to follow--forget America for a moment. Corny though it may sound to some, this is about society; the world ... about the effect Kamen's eye-opener of a child-imagination engagement system can have on human beings. This is crucially important: we have all been carping and whining for decades now about how we need to fix our educational system and we do. I believe that FIRST is the cornerstone, the first building block for making education worldwide something to take off and really fly.

And my heartwarming experience of it all started with a young person approaching somebody she didn't know--me--but who apparently looked like someone she could convert to her cause: robotics and all that comes along with it.

A 'Robotics Girl' Grows Up

The young lady didn't wait very long before approaching me. "Can I answer any questions for you?" she said with a cheerful smile. She was wearing safety goggles which give anyone an alien-like look but almost immediately I didn't see the bulbous, plastic eye-coverings anymore; this adolescent was that good at putting me, an adult presumably, at ease.



I was at the cavernous but utterly electrified Jacob Javits Center in NYC and was reconnoitering the FIRST (For Inspiration and Recognition of Science & Technology) competitions in robotics and technology.

Emily Stern was a senior at Plainview-Old Bethpage (POB) High School on Long Island and a girl totally and unwaveringly into robotics. She had been first indoctrinated by accident when she was five years old



and went to pick up her older brother at his robotics competitions put on by FIRST, a non-profit organization founded by Dean Kamen.

Here's a picture of Emily ("Miss Stern," as I call her) when she was five years old and her little imagination was just starting to blossom (coincidentally on another of Kamen's inventions, The Segway).



*Photo Credit:
Stephanie Stern*

When she was very little, she told me, "I was completely obsessed with Legos. Our basement was filled with them and I would come right home from school, go down to the basement and spend hours playing with my Legos." I wondered how much the Legos had to do with Emily's subsequent interests in mechanical engineering and decided it was pivotal.

As her approach to enlighten me clearly proved, Stern has developed a heartfelt passion for helping people understand complex subjects particularly those younger than herself. "In my basement with my Legos, I would explain my Legos to everyone," she recalled as if she was sharing a secret.

"Then, I was just so excited to be going to my brother's robotics competition," Miss Stern told me later, "the older kids would show me around and help me understand all the mechanics. If I was really lucky," she gushed, "they would let me ride on the robot!"

Back at the Javits Center, I threw a few questions at her which she handled deftly with the aplomb and wisdom of 40-year old. One answer which surprised me was to my question, "Have you ever met Dean Kamen?" "No," Miss Stern began somewhat dejectedly, "I haven't but I would absolutely love to ... I don't know, I might faint though. He's such a great man." I made an underscored mental note that Miss Stern should meet Kamen because I wanted to see what her reaction would be.

Stern was the president, lead mechanical engineer and 'driver' of the "FIRST Team 353, The POBots" but partly due to her fascination with robotics and all the math and science involved, Emily will be going places this year. More about that later.

Dean Kamen's Visit to His NYC FIRST Kids

As he sat in the VIP area at the Javits Center, Dean Kamen looked as comfortable as he could be. He talked about all the great developments at FIRST over the years since founding it in 1989.

We look out over the Javits center crowd of parents and their kids from a second floor wall of glass windows, and it is readily apparent to me that FIRST is and has been for a significant period of time, Kamen's real passion and the focus of his insatiable inventing attention. His heart is not up there in the VIP room with the food, drink and quiet, high-level conversations but down on the floor with those kids doing things with their robots. He would suggest we go down there soon enough, I knew.

"FIRST came into being because I think this country is in trouble," Kamen said, a concerned look invading his face, "the education our children are getting is not what it needs to be. I don't want to blame anybody; the educational system, the leadership or certainly not the teachers but my job is not to identify the problems, it's to solve them" How intriguing, I thought to myself that this man sees it as his "job" to fix the educational system ... by himself if necessary. We need more people like this I quickly decide.

Kamen's original mission was a two-pronged, patriotic and passionate one to first help improve America and her future by secondly, creating a newfangled, not-for-profit organization which would guide kids--interest them--in science, math and technology for their future fun and profit.

During my first interview with Kamen, he listed his passions in order of their importance to him and his mind: "FIRST, Aviation and supplying clean water to the developing world." There was no equivocation in his voice as his listed FIRST at the top of his passions.

His early vision of FIRST before its beginnings was to get people involved in the FIRST mission. "I wanted to get companies involved to help me finance FIRST; I wanted teachers involved, deeply involved; I wanted the students involved; and I wanted parents involved," Kamen told me with conviction. Now 23 years later, as you will read in this article, Kamen has fully engaged those groups of people.

But he's nowhere near done yet.

We're talking about his alimetary, elementary creation for American children and his phone lights up with a call. "What area code is 702?" he asks me. "Las Vegas, Nevada," I quickly respond. "Oh, this is Harry Reid, I must take it," he says apologetically.

After a 20-minute conversation in a private corner, Kamen returns to me apologizing again. "Can you tell me what you were discussing with Senator Reid, or would you have to kill me?" I ask jokingly hoping he'll tell me. "Sure," Kamen says happily, "I wanted him to come to New York for this FIRST event and he was trying to get me to come to the FIRST event in Nevada. We couldn't coordinate our schedules but the Senator is a big FIRST supporter."

A Scientific Company Chairman Gets Involved in FIRST

An avuncular gent then walks up smiling; Kamen introduces [John Abele](#) who was a very early partner with Kamen and the Founding Chairman of a medical technology company called [Boston Scientific](#).

Abele, a member of the Forbes' "World's Richest People List" at [#258](#) in 2006 is listed as a "self-made" fortune which it quickly occurred to me is a fundamental tenant of FIRST; *making yourself*.

"First of all," Abele started off, "I'm just a foot-soldier in the FIRST effort. I'm in 'the Dean cult' for the passion of what FIRST is doing. Kids raising the bar rather than making your opponent lose. This is what the concept of 'coopetition' is all about."

"Gracious Professionalism and Coopetition ... I use these awesome catch phrases in my daily life." Emily Stern, former President, Planview-Old Bethpage Team 353

Abele continued, "Capitalism and business is all about this idea, the idea of mixing together different disciplines is not rewarded. While the process of staying in your silo and not mixing your silo with others ... well, an entrepreneur needs to understand the many different sciences and disciplines are required to succeed. 'Flock of birds' behavior; you find it throughout nature. It's when everybody understands the goal and knows how to get there. This is one of the outcomes for kids of a FIRST experience--you learn the enemy is not the enemy and if you're constantly displaying your superiority to others, they won't follow you."

"FIRST has taught me how to be a team player. Everyone loves winning, but that is not what FIRST is about. At the World Championship two years ago, my mentor offered my assistance to help out another team with their robot. They needed help fixing their chain. After I helped them I felt truly rewarded to have the knowledge and be capable of fixing their robot, but also to help a team in need. This truly was a gracious moment I will never forget!"

Emily Stern, former President, Planview-Old Bethpage Team 353

"You measure a leader by how many people follow them. Great leaders learn to cede control in order to gain control; it's a paradox. All the people involved in and magnetized by FIRST, we're all stewards of an amazing experience for children," Abele concluded with a flourish.

"When I joined my FRC team in 2008, I did not have the confidence to speak publicly or have the ability to share my experiences. Now as a senior, I will stand up at galas, demonstrations, or anywhere and share my passion for robotics. I speak from my heart and the words flow naturally. I am able to share my designs with my team without pictures, and they will be able to understand."

Emily Stern, former President, Planview-Old Bethpage Team 353

In order to put the raging success that is FIRST and its attraction to technologically-oriented businesses in perspective, there was a recent announcement: both Eric Schmidt, Executive Chairman, Google and W. James McNerney, Jr., Chairman, President, and CEO, The Boeing Company have just joined the FIRST Board of Directors.

Money from these tech and scientific companies in both the form of team sponsorship and grants to FIRST itself are what allows so many kids and schools to finance the materials, technologies and travel expenses to compete in the various events all the

way to the national finals. What a coup these two Chairmen coming on-board FIRST is for Dean and his kids.

With the help of corporations, companies, small businesses and executives like these, the 2012 FIRST finals were held in the Edward Jones Dome, a 70,000-seat arena underneath the famous arch in St. Louis.

Note to corporate executive readers: Forget that \$3 million Super Bowl ad and invest in "The Super Bowl of the Mind." You should attach your brand with FIRST now! There are many overall FIRST and team sponsorship opportunities available which will result in a boatload of goodwill and consumer appreciation for your brand.

The Rules

Each team gets an identical start-up kit and then has six weeks to design, build, test, program the software and then give it Fed-X. They'll see their robot in several weeks at their first competition. As Steven Kuntz, Robotics Advisor at Emily Stern's Plainview-Old Bethpage JFK High School's "Pobots-Team 353" said, "For industry to do what we do, it probably is a couple of years ... we have six weeks." No pressure there.

The NBA (Robotics) Finals Come to Javits Center

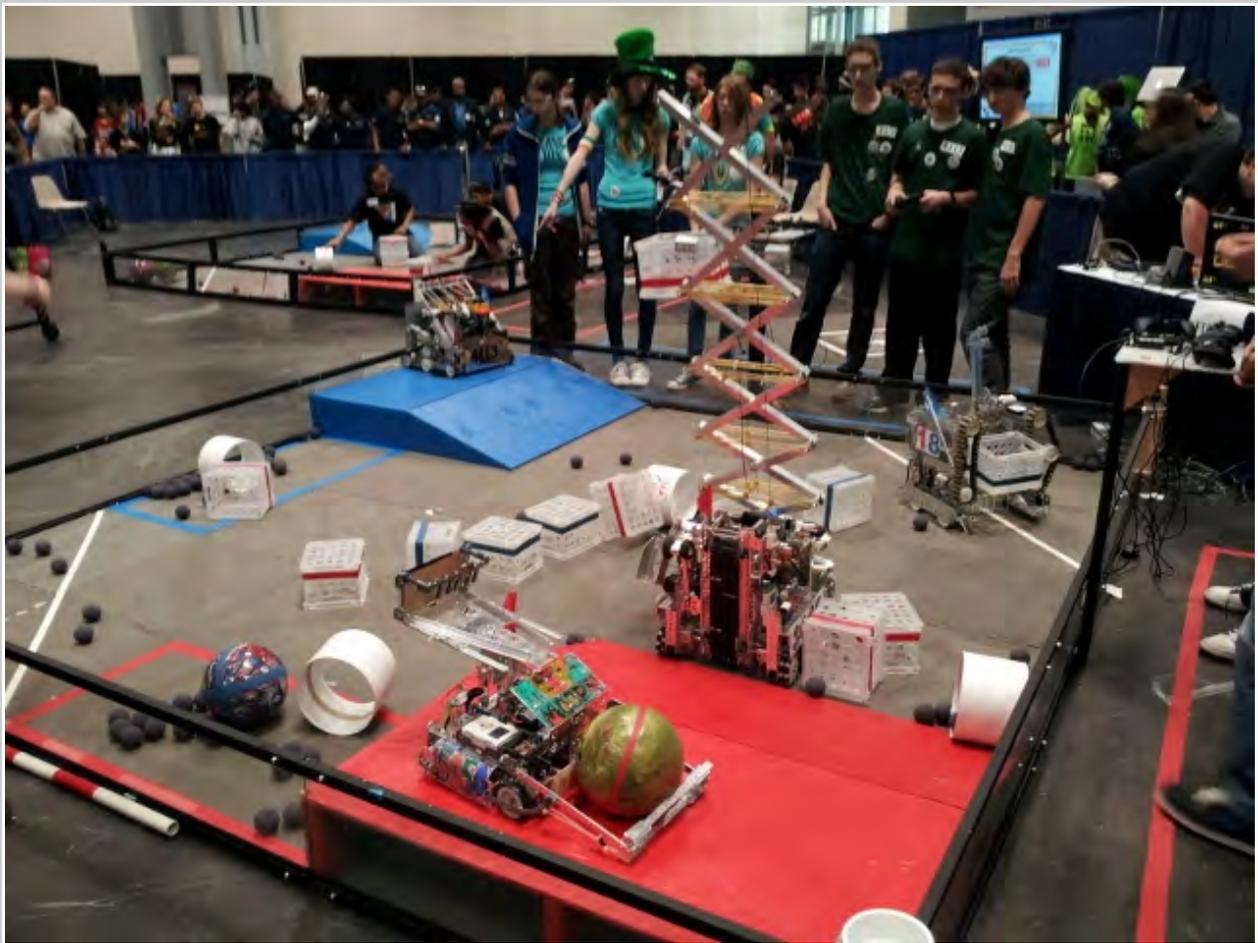
The scene was astonishing: set-up like a massive, multi-faceted series of school basketball games replete with grandstands filled with cheering, dancing students and parents; basketball courts with four baskets in a diamond-shape; real professional scoreboards with giant 'jumbovision' screens; an official scorer table and referees in the familiar 'zebra shirts.'





Big, highly mobile robots cruised the court--first crossing over on see-saw type bridges they stayed on their side--scooping up basketballs from the bottom as they went and almost magically transporting them to the top of their apparatus to fling them at the hoop. Some took faraway shots from the top of the key and beyond while others scooped as many balls as they could then scampered right up as close as possible. One robot weaseled itself right up to the base of the basket, then had a flat horizontal extender pushed out over the basket and simply push the balls off the end and right into the basket.

Smaller robots duked it out in small rings where moving bowling balls and finagling smaller rubber balls into baskets derived points and won the day.



There were "pits" where the kids all worked on their creations--just like NASCAR and the sheer amount of science, math, engineering and software programming that went into these robots was astonishing.



A "driver" ... they do look like race car drivers, don't they?



Generally speaking, the robots shoot baskets because they can score points this way. But some are designed to excel at defense--preventing other robots from getting balls to shoot or blocking their shots when they do--and this one pictured below, had the fascinating design of not shooting at all. It couldn't shoot but would cruise around scooping up balls and feeding them to their partner shooting robots ... I thought that was a great design dynamic.



And, over the last couple of years, FIRST has incorporated the 'coopertition' aspect into their robot games. In this year's design with the ramps in the middle of the court, robots would have to get a ramp down on their side and then cross over on it see-saw like to get to the side where they could shoot. So most had specially designed hydraulic 'arms' which the drivers would use to manipulate the heavy metal ramps. Additionally, as it turns out, toward the end of the 2-minute, 15-second competition periods, the robots all scramble for the really big point-getters: balancing with another pre-arranged robot partner team on one of the ramps to score big points and conceivably win the game going away at the very end. Two and sometimes three robots would attempt to balance (both sides of the ramp off the ground) to score; this was like conducting remote brain surgery using a gaming joystick.

This was all the grand, enduring vision of Dean Kamen. The sports analogy flipped on its head and turned into one of kids using their brains instead of their bodies stemmed directly from something Kamen told me passionately: "Learning is not easy; it takes hard work. And kids will only work hard and bounce a ball because there's the NBA for them but

realistically only a small fraction, much less than 1% of all kids can ever make it to the NBA," Kamen said wistfully clearly having applied some of his brainpower to this.

"American kids," Kamen continued, "despite the fact they're immersed in

technology--*they wear* more technology than kids can even access elsewhere-- American kids *are taught* less science and math than other kids in other countries.

The Maestro Visits The Big Event

The Dean Kamen dress code is always the same. I laugh to myself as I imagine his closet at home: 50 pairs of jeans, 50 denim work shirts and 10 pairs of Timberland work boots. It is his trademark, his badge of honor; it says I'm not a big-shot but a regular guy. But if Dean Kamen is a regular guy, so was Copernicus or Thomas Edison.

Moving down to the floor of the Javits Center in his usual workmanlike attire, there seemed to be a weird, magnetic aura around Dean Kamen which started kids buzzing at about 75 feet of proximity to the FIRST founder and then brought them rushing at about 30 feet and finally, creating an impenetrable wall of kids at about 15 feet forcing a complete Kamen skid.

But I had a first stop in mind for Kamen that he didn't know about: Emily Stern.

When we approached her team's booth, I hot-footed it ahead to Miss Stern and said to her, "Do you have a minute? I have somebody I'd like you to meet." She looked taken aback and saying "sure," followed me unaware into the CNN-camera strewn maelstrom which is meeting Dean Kamen.

She didn't faint but she certainly did bust out into tears upon meeting the man. Such is the effect of meeting the personally humble but hugely impressive Kamen; people beam at meeting such a gracious and down-to-Earth person who's accomplished so much..



When Kamen stops for his kids, he stops. I mean for a long time.



Wherever Kamen goes, adoring kid chaos ensues. Honestly, having witnessed it myself, it's like Michael Jordan, Tiger Woods, Madonna or Justin Beiber all rolled into one except that Kamen just doesn't stop signing, talking to and encouraging his FIRST kids. I followed him around for more than two hours as he peeked into each and every booth



(there were dozens), talked with every kid he possibly could (there were thousands), until finally, exhausted, I had to leave to go home and lie down. He remained making the rounds.

He chats so readily, he signs anything he's asked to sign ...

As I said, Dean Kamen can and will sign anything

Dean Kamen always asks where FIRST kids are going to college and what they're studying.



At one booth, a group of kids, some girls, some boys, some long-haired, some short, Kamen stops and looks at me. "Do you know where these kids are going to school?"

On scholarship?" he asked me with a serious face hiding a sneaky grin. The answers from Dean came quickly and in a staccato voice: "MIT, Harvard, Purdue, Rensselaer Polytechnic, another MIT ..." Kamen said pointing at his FIRST kids, "most on scholarship, free rides," he smiled like a man fulfilling his life's work.



Kamen looked at a shaggy-haired, young man and said to him, "What are you studying at MIT?" The young man looked scared out of his wits but managed to respond, "mathematics." Then Dean did something





unexpected, especially with a throng of people and a CNN camera focusing in on the young man, "Is there a local maxima of a function x to the $-x$?"

Well, the kid immediately smiled which turned quickly into a grimace and then thought hard. "Oh, I know this one," he struggled to remember presumably, "... no, I don't" he admitted looking like he knew he missed an opportunity to show his great mentor he knew something about math. "Well, how would you go about solving it?" Kamen prodded gently. "I'd create a differential," the FIRST-er offered up looking for some, any, validation from Kamen. "Yes!! Excellent!" Kamen responded enthusiastically, "then what?" The young man thrashed and flailed mentally and though he made some good progress ultimately gave



up and listened intently to Kamen's explanation.

Later, Kamen told me, "that question, 'what is the local maxima of a function x to the $-x$ ' brings together calculus, geometry, algebra and the body of math in a wonderful way. Very special numbers like 1 and 0 and Pi and e come into play and it forces your mind to search."

I never did come to understand the real answer to that question but it was not due to a lack of explaining by Kamen.





Neither did the boy, I think, but I know one thing: he will make every effort to find out while he's studying math at MIT, that's for sure. As the crowd and cameras receded into the rest of the Javits Center, the young man and I were left standing there, alone. He looked exhausted but exhilarated and disappointed in himself. "There's no shame in being stumped on a math question by Dean Kamen," I said trying to cheer him up. "No, I guess there's not," he said perking up noticeably.



A short distance away I was accosted by another FIRST kid. "I just want to tell Dean how much FIRST has meant to me," the African-American teenager said to me, "I just want him to know how his FIRST has changed my life." Touched like I haven't been in ages, I helped get him wedged into the front of the throng of FIRST kids mobbing Kamen. He repeated what he told me to Kamen and the look on Kamen's face was priceless: one of utter humility and unbridled joy.

The President Of FIRST Speaks

Jon Dudas is the President of FIRST and works quite closely and passionately with Kamen to make good things happen. A former director of the US Patent and Trademark office, Dudas is wonderfully qualified to be involved with Kamen and his ever-growing FIRST. Here, in his own

words are some of his observations and anecdotes about FIRST ...

"What inspired me to join FIRST:

When I was the Director of the US Patent and Trademark, we had the important challenge to hire 1,200 highly qualified engineers per year to support our innovation system. I realized we were hiring the equivalent of more than two percent of American-born graduating engineers (USPTO examiners must be US citizens). This was alarming to me. At that time, I met Dean Kamen, the founder of FIRST and a well-known inventor. I was not aware of FIRST, but I was interested in Dean becoming a member of the USPTO Advisory Committee. He agreed--on one condition--if I agreed to go to the FIRST Championship. I agreed and was amazed and thrilled by what I saw. Seeing 30,000 kids competing and celebrating like NCAA Final Four teams while demonstrating advanced technology, engineering, collaboration and communication skills floored me. My initial selfish thought was this is the answer for hiring at the USPTO. I soon realized

it is the answer to the future of the world. I have always been inspired to support and promote innovation. I cannot think of a more effective way than to support and promote innovators. I cannot think of a better way to do that than to support FIRST.

FIRST Changes lives:

One example I find inspiring is the story of a young man in St. Louis whose source of inspiration before FIRST was his gang. After joining FIRST, he found a passion and a group of mentors and friends that made a difference. He had his gang tattoos removed, traveled across the city to take advanced math classes and got even deeper into FIRST. His next step was not a higher rank in a gang or an arrest--instead, he got a scholarship to MIT.

At USPTO, I had the privilege of helping innovators produce inventions. At FIRST, I have the privilege of helping produce innovators.

Two years ago at the FIRST Lego League (FLL), we piloted our first innovation competition, the Global Innovation Award. More than 140 teams chose to submit their innovations as their project for FLL. The winning team was a group of girl scouts from Ames, Iowa whose invention was a prosthetic device that allowed a three year-old girl to write for the first time. It was amazing, and it was one of many worthy innovations. This team, the Flying Monkeys, was rewarded with a \$20,000 check to help them get a patent and develop their invention. They were honored at a ceremony at the USPTO, have visited the White House and represented the US in Brazil.

Recently, Edison Nation, an innovation developer with an Emmy Award-winning television show "Celebrating Inventors," sponsored the competition. This year, two winning teams were offered a licensing deal where their inventions would be funded up to a quarter of a million dollars each to be developed to go to market. Both teams will also be featured on the television show.

Kids are natural innovators. Part of FIRST's magic is to allow them to develop this natural instinct and ability."

I don't think Kamen could've found a better President for FIRST than the former head of the US Patent Office.

What the Kids Learn

I thought that rather than me blathering on and trying to communicate what these kids learn from their FIRST experiences, I'd let Emily Stern detail what she learned directly to you, the reader.

"FIRST is not just a robotics program; it is a life changing experience ...

Through my 15 years in FIRST, I have been able to develop friendships, a personality, knowledge, and best of all, character.

FIRST taught me to be a teacher ...

My robotics team experience gave me an opportunity to teach the younger students on my team, this opened up a new passion in my life. I hope to pursue this after spending some time in the field of Mechanical Engineering. I feel that as a teacher, it is important to have experience as well as knowledge. So either as a math teacher or an engineering professor I will be able to show my students that what they are learning is truly applicable.

FIRST has made such an impression on my life ... That I will not give it up when I go to college. This coming fall I will be attending university as a Mechanical Engineer with a minor in Education. I choose my college because of its partnership with FIRST. I will have the ability to mentor FIRST teams while at college. I know that when I am home for breaks, the first place I will be visiting is the tech room at my high school."

The Results with Kids

According to MIT's former President, approximately 11% of the 2012 entering freshman class at MIT are FIRST kids ... 11%! Yes, you read that right.

One reason FIRST kids get into the best colleges is because the kids receive so much help from their teams and mentors in terms of filling out college applications and just the general, ever-present FIRST mindset that they **will be** going to college.

Then there are the college recruiter booths at FIRST events. It is wild. The kids aren't so much competing to get into the best colleges, the college recruiters are literally chasing student FIRSTers down the aisles.



Yale,

Columbia, Purdue and many other top schools were there competing for top FIRST kids

The 2012 FIRST Finals in St. Louis

Nowhere in the world was there as much kid-energy as in St. Louis this past April 26th through 28th. There were 12,000 students from 32 countries competing with their custom-built robot babies. This event is like the Super Bowl, World Series, and NBA Finals all wrapped into one.

FIRST supporters include not only corporate chieftains, scientific geniuses, school

teachers, philanthropists, parents and members of the press like me but also titans of sport and music.



*Photo courtesy of FIRST
THE [perfect helper](#) for a robotic basketball competition*

"FIRST is a Winner" by Kareem Abdul-Jabbar

"The FIRST technological jamboree is the most interesting academic industrial collaboration that is taking place anywhere in the world. It is the brain child of Dean Kamen that sets up a competition for young tech savvy enthusiasts to compete with each other for scholarships and research funding that will continue to supply our tech oriented industries with new talent and new ideas. Groups of youngsters and their teachers and mentors are given a challenge to create robots that can do specific tasks. This year the theme was basketball and the result was a multitude of hoop shooting robots that vied for prizes. Mr. Kamen's idea of turning technological innovation into a sport has struck a chord with thousands of young people across America and around the world. The teams that come up with the best ideas are given scholarships and research money to pursue their ideas further. By generating this type of interest in this area the FIRST competition is creating a new generation of engineers and mechanical hot shots who are joining the ranks of America's technological innovators. Given the concerns that we have about losing the edge we once enjoyed in science and math versus the rest of the industrialized world, FIRST is making it possible for America to retake the lead in technological pursuits and that benefits all of us. I know I had a great time when I made my first visit to the FIRST competition in St. Louis earlier this year and

it was very interesting meeting the students from all over the United States and watch them compete in an arena where they can all be winners."



*Photo courtesy of FIRST
Kareem Abdul-Jabbar, the NBA's all-time leading scorer hangs out cheering on FIRST team 330 and his namesake robot "Skyhook"*





Photo Credit: Adriana Groisman

The Black Eyed Peas' will.i.am was in St. Louis showing his support. will.i.am was riding around on Segways backstage at concerts and tracked Kamen down to get involved

will.i.am is a massively involved FIRST supporter. After seeking out Kamen like a heat-seeking missile and asking Kamen, "What can I do?," he's thrown his all behind the FIRST-branding effort.

One of the first things Kamen suggested to will.i.am was that since the Black Eyed Peas had played halftime at the Super Bowl, they should play at halftime of the national finals of FIRST. So, amazingly, will.i.am and the Black Eyed Peas [did](#). Setting up their gigantic stage with full special effects, the Black Eyed Peas drove these kids completely over the edge.

After getting his band to play this extraordinary event for the kids, will.i.am didn't stop there ... no he didn't. This robot-crazy, world-famous celebrity then personally financed and produced the filming of an hour-long special for broadcast TV and, when he discovered the networks had no interest in showing his documentary of love, he bought an hour on ABC and showed it himself.

When the network declined to promote the program, will.i.am enlisted the help of friends like Justin Bieber, Snoop Dogg, Britney Spears, Simon Cowell, Justin Timberlake, Jack Black ("You know who the first rockstar was? Einstein!"), Steven Tyler, Mylie Cyrus, Bono and many others. The program "i.am FIRST--Science is Rock and Roll" can be [found here](#).

As if this wasn't enough for will.i.am to do, he mentioned FIRST to President Obama when he was at The White House and the President jumped at the chance to help, recording a video introduction for this superb TV program. How great is that?

After appearing with Kamen on CNN's "[Piers Morgan Tonight](#)" to promote FIRST and then, a significant mention on ABC's "[Nightline](#)," will.i.am has established himself as a serious, philanthropist, kid-motivator and celebrity who truly cares about others.

"Dean Kamen is my hero," will.i.am said. "He is a star in technology and the type of person that America, and the world needs more of. Kids should be looking up to [STEM](#) (Science, Technology, Engineering, Mathematics) experts like Dean, NASA scientists and astronauts, doctors who find cures for diseases, engineers who design and build [LEED](#) certified buildings, and experts who design safer and more fuel-efficient cars, just like they admire pro athletes and musicians. FIRST is a great place for young people to

meet and get to know STEM leaders and learn about careers that depend on STEM skills."

And, not to put too fine a point on it but the engine that continues to propel FIRST forward is corporate sponsorship. At the 2012 Finals, Intel was a big sponsor and [meeting](#) with will.i.am proved how important this kind of technological and financial support truly is for this tremendous not-for-profit.

will.i.am is quick to add, "FIRST is an incredible program. Going to the FIRST Championship in St. Louis in April is a must event on my calendar - I wouldn't miss it. I volunteer with FIRST because the teams and kids inspire me and give me hope for America because they are our future leaders."



*Photo Credit: Adriana Groisman
In a 2012 rematch of his 2011 FIRST finals contest against Kamen, will.i.am is triumphant*

FIRST Changes Lives ... Again ... and Again

John Abele mentioned something to me which hit me right in the aorta: at a Boston FIRST event, two kids who were homeless, had homes by the end of the event. I went around like Sherlock Holmes trying to confirm this and was having very little luck indeed. Until I was introduced to Elly May O'Toole.



O'Toole is a teacher at [Brighton High School](#), part of the Boston public school system. She has taught AP (Advanced Placement) Physics there for 14 years. Having founded the FIRST "[Burning Tigers](#)" team at Brighton H.S. in 2006, O'Toole has seen the program grow there and seen the kids' inspiration and aspirations grow along with it.

"I would run into these homeless kids in my classes," O'Toole said clearly concerned, "and they were usually too scared to tell anybody they were homeless they were afraid it'd make things worse. There were about 25 'unaccompanied youths' in the class of 2012," she recalled.

"Then one day, I noticed a young man in my AP Physics class was getting thinner; he obviously wasn't eating or being taken care of properly, so I started feeding him. His parents weren't citizens and I knew I had to do something to help him." So O'Toole found a homeless shelter for young people and helped the young man apply; he was accepted after O'Toole says the shelter received the first application ever with a math problem in it.



"Roberto" was that boy. Now almost 21, Roberto has been on one whole of a journey from his home in Bolivia to America at age 15: from one kind of poverty to another entirely different



sort of desperation: that of a homeless teen just trying to eat and stay in school in the most opportunity-filled country in the world.

"At first I stayed with relatives," Roberto told me ominously, "but that

didn't work out too well." I could tell from his voice that I shouldn't pursue that line of discussion. "Then Ms. O'Toole helped me find a homeless shelter," he said taking a more positive turn.

When he arrived in the USA, Roberto didn't speak one word of English; what a strange and foreign planet America must've seemed.

"I used to stay after school every day," Roberto said. After all, where else would a homeless boy have to go? "And, Ms. O'Toole did the FIRST robotics team after school, so I just naturally got involved. I loved designing the robot, building it and learning all engineering, electronics and programming involved. The FIRST team was great because it provided me with a second home and helped me get away from all the awful things that were going on in my life then."

What lies ahead for Roberto? Well, he tells me that he "kinda wants to build robots." And the really good news is this: Roberto has just finished his junior year at MIT pursuing his degree in Physics. "What then?" I ask Roberto. "I don't know ... hopefully, I'll get a job," he predicted to big laughs from us both. One possibility for Roberto is that he might pursue a doctorate--the sky's the limit for this FIRST alum.

Honestly, the story of Roberto touched me in places inside I didn't know existed.



Another O'Toole/FIRST kid with a tremendous personal story is "Lyn." 19 years old now, Lyn is yet another example of precisely how FIRST and a Boston public school teacher named Elly May O'Toole go around changing kids' lives for the better.



Like Roberto, Lyn also came from Bolivia to the US; couldn't speak a word of English and was homeless in high



school. Starting with getting her into a shelter, then FIRST, again at O'Toole's prompting, Lyn blossomed, learning English as fast as anybody could. O'Toole told me this was another wonderful byproduct of

working closely with other English-speaking students in a multi-disciplinary world like FIRST--you pick up the language and culture much faster than you would in an ESL (English as a Second Language) class.

"On the Burning Tigers, we divided the work," Lyn stated excitedly. Working in such close proximity to others was a key and essential benefit for Lyn who says, "FIRST meant everything to me actually (and I could tell she meant this) ... it's like being home for me ... a family ... I really needed that," she spoke haltingly not because she had difficulty with the language but because it had been that important in her young life.



Both Lyn and O'Toole told me that a big, helpful part of the FIRST program is the assistance it provides in filling out college applications and beginning the labyrinthine process. "Applying to college," O'Toole said, "being accepted and all the kids supporting each other is an integral part of the program."

Starting at Tufts University full-time this fall, Lyn will be studying Mechanical Engineering on a full-ride scholarship. She told me with exhilaration and wonderment how it felt to move out of the shelter and into her Tufts' dorm room a few weeks ago. Yes, I think we can check-off Lyn as another FIRST success story of Greek proportions.

The stories of Roberto and Lyn can only be the tip of the iceberg when it comes to FIRST changing lives.

"Robotics is the way of the future because we use Robotics so much in everyday life and society that these kids will be well-positioned for their work careers," O'Toole observed firmly but cheerfully. She told me that the high school is starting a Robotics class next year as a result of the success of FIRST and that, it seems to me, is a feather in O'Toole's cap which makes her very proud indeed.





*Elly May
O'Toole and
her 2012
FIRST
Robotics
Team #1973
cheerfully
enjoy some*

post-competition frozen yogurt

Emily Stern, Prime Example of What FIRST Can Do

There's no doubt that Emily Stern's life would be a lot different today had she not been offered that first robot ride by her older brother. Emily Stern is also a lot different from Baby Boomer girls who grew up with me who wouldn't traditionally have been exposed to or taken an interest in engineering, mathematics, AI or robotics or any of the technical disciplines which now consume Miss Stern's imagination. And though different from my day, this is a very good, and as I said before, very special transformation of our children to keep them and America competitive on a world stage.

"The robot is three times my weight and height, but I am not intimidated. My older brother, Andrew, takes one look at me and asks, 'Want a ride?' I hop on and grab the long arms tight. My attention is not devoted to how much fun it is to be cruising around on the robot, but to one simple curious question, 'How does this thing work?' Little did I know that this would be the ride to change my life," Emily Stern recalled.

Miss Stern is starting at Boston University this fall where she'll be studying Mechanical Engineering. It must be a triumph for her parents who have been so involved in FIRST; set-up the program at her high school; and with their baby girl now going off to college to pursue her career in engineering, have capped off the raising of four children who are all now (or will be) professionals with three of the four becoming engineers.

"FIRST is not just a robotics program;" Miss Stern stated with extreme conviction, "it is a life changing experience. Through my 15 years in FIRST, I have been able to develop friendships, a personality, knowledge, and best of all, character."

Emily Stern is just one example of the many, many kids who have been helped by FIRST. Shaped by FIRST. Offered new avenues for their future success that as Kamen says, "uses that muscle hanging between their ears" instead of living on a prayer to become an NBA or Rap star. As she faces a future loaded with excitement,

wonderment, learning and possibly teaching, Miss Stern prepared for her senior prom.



Photo Credit: Stephanie Stern

It occurred to me that Miss Stern was the only one out of many kids at Javits Center that day, who came right at me and said, "Do you have any questions?" I hope she continues that for the rest of her life, *coming right at people* and asking them if they have any questions. And I'm so glad she asked me.

"At our last demonstration, in front of Citibank on a warm summer afternoon, a little boy comes up to me, staring at the robot with his eyes wide open. He inquires, 'How does this work?' I smile and ask, 'How about a ride?'" Emily Stern's recent recollection.

Dean Kamen Summarizes

And all of this--FIRST and the tremendously positive effect it's had on many thousands of American kids, sprang from the vivid and selfless mind of Dean Kamen, who made the alarming observation early on that America's kids were falling behind other children around the world in the things that he held near and dear: scientific and technological things.

Kamen concluded, "After 20 years, I can only imagine what the passionate army of FIRST alumni will do for this world. Some will become our future leaders in education, industry, and policy, while others will surely contribute to curing cancer and Alzheimer's, or producing engines that don't pollute. More than any other form of stimulus, this country needs - and the world depends on - a generation of bright, passionate innovators to confront the great challenges of the 21st century. These kids are the future, plain and simple."

Amen to that.

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