

Faces & Places – What are we putting FIRST in education?

What are we putting first in education? Students? Test scores? Life after school? On a Friday morning this March, Beth and I were lucky enough to see some amazing High School students in action at the FIRST® Robotics competition being held at Portland's Memorial Coliseum.

The adventure began when we were captured by pirates, Scalawags to be more specific. A band of ten youthful (despite some Sharpie facial hair) pirates stole us from the world of networking and policy discussion, captivating our attention with a tech treasure – a robot designed to scale ancient pyramids, cliffs and walls, but only after forming Alliances to fling disks of treasure into shoots hidden throughout the land. The “Scalywags” were from Lebanon, Oregon (a landlocked place making the inhabitation of pirates somewhat intriguing), and they were in Portland to show off their tech treasure at the 2013 FIRST® Robotics Competition: The ULTIMATE ASCENTSM.

Sixty high school teams from Washington, Oregon and California gathered in Portland to battle it out. After a fast and furious six weeks of designing, programming, constructing and testing the top teams from the Northwest met in Portland to contend for a chance to compete at the national level competition know as “The Superbowl of Smarts” in the NFL Rams Stadium in St. Louis. I have spent many hours watching sporting events in my life – from middle school to professional games in sports ranging from basketball to water polo – and this competition, although quite unique, created an atmosphere synonymous with any other sporting event. Lines had been drawn on the field in the form of 12-ft tall metal pyramids and baskets, loading zones, and Frisbees. Mascots and costumed players (representing pirates, tigers, robots and more) roamed the stadium, started chants and creating an electric energy.

This year's game, was played by two competing “Alliances” on a flat, 27 x 54 foot field. Each Alliance consisted of three robots, which competed to score as many discs into goals as they could during a two-minute and fifteen-second match. Additionally, Alliances won additional points for robots able to climb the rungs of two 12-ft. tall metal pyramids. This was one of the most intricate competitions I have seen.. The innovative strategies and solutions to the challenges set before them, not to mention the technical skills necessary to create their robots was incredibly impressive.

As the matches continued, new teammates were introduced to the field, adding a whole different element to the competition. This challenged players to create a strategy that will allow them to work together, while at the same time advancing individually in the competition.

During the opening ceremonies something was clear to all players and spectators: we are here to create engineers and innovators.

We're not tricking kids into enjoying and pursuing engineering, FIRST® is up front and honest in their intentions behind these programs – we need to be raising a generation of engineers in order to fill the 39,000 STEM jobs that will be available to Oregonians in 2020, and be competitive on a national and global playing field.

Part of our time at the competition was spent in the world of networking and policy discussions. We heard from several industry leaders and their message was clear. We are very concerned, about the lack of qualified individuals available to fill open positions in growing and lucrative fields like software and computer engineering. Industry officials reported not only having to recruit individuals outside of Oregon, but outside of the States as well. As an economist embedded in the field of education, observing the process of education reform, it makes me wonder – why are we not doing a better job of connecting what we're teaching in school, to what our employers are looking for?

We have a double-sided employment problem in our country. On the one hand there are not enough jobs, on the other there are not enough employees. According to the Afterschool Alliance, for every 4.3 unemployed people, there is 1 non-STEM job available, while for every 1.7 STEM jobs available, there is only 1 unemployed person.

The field of afterschool and summer programs has been well positioned to fill this gap because of the ability to create low-risk, fun environments for students to explore new ideas. As Dr. Michael Seelig, Strategic Initiatives Director for the Oregon Education Investment Board quipped, "Just like the arts creates a third space where students learn to express themselves through singing, drawing, painting, poetry or by banging on a drum or mashing the keys on a piano just to see what it feels like, STEM too needs spaces where students can play, tinker and experiment, break, blow-up and repair, and experience firsthand just how cool science can be."

The FIRST Robotics competition and experience is about creating future engineers, creating a solution to that double-sided employment problem and closing the employment gap. FIRST competitors are not only developing technical skills, they are experiencing trial and error, thinking outside the box, exercising curiosity, and mastering teamwork all under tight timelines and serious pressure. These skills are critical to creating strong engineers, but they are not exclusive to STEM fields.

Our world economies are changing rapidly, and in order to compete our students must be flexible, strategic, and able to work together to be critical thinkers and problem solvers and take risks. We need an education system that supports and develops those skills or we (Oregon and the United States) will not be able to compete.

The FIRST Robotics competition introduction video featured a quote by Charles Darwin: Those who learn to collaborate and improvise will prevail. Afterschool and summer programs across the state and country are doing just that, now we must ask ourselves is our education system doing the same? As contributors to education policies, we must ask, what are we putting FIRST® in education?