



## TRAILBLAZERS BLOG

There is more to say about *Trailblazers'* topics than will fit in our newsletter, so we're writing a blog now. Take a look: <http://ctetrailblazers.blogspot.com/>

### COMPLETER FOLLOW-UP

The 2011 Follow-up of 2010 CTE completers is underway. Passwords to access the system were uploaded into the SWS dropbox but these have now expired. Administrators who have not yet collected their passwords should contact us at [CTEcompleters@virginia.edu](mailto:CTEcompleters@virginia.edu)

### EMPLOYMENT NEEDS DATA

Occupational employment projections for 2008-18 are available for Virginia's LWIAs from the Virginia Employment Commission. Administrators can use these data to prepare new courses, complete local plans, & prepare plans of study. Excel files are available on the [Trailblazers website](#).

We can help you use the projections for program planning. Call or email us: [Trailblazers@virginia.edu](mailto:Trailblazers@virginia.edu) 434-982-5582

### WORKPLACE READINESS SKILLS

CTE has a new list of 21 workplace readiness skills that must be taught in every course. The resources you need to implement this change in the curriculum are online at [Virginia's CTE Resource Center](#) website. To view these, click on Verso, then a program area, then a specific course. You will see the skills list & instructional resources for each skill.

Copyright ©2011  
Rector & Visitors of the University of Virginia

## Looking For New Ideas

At *Trailblazers* we believe that it's important for students to have an open mind when it comes to the careers they explore and the courses they take. The more options students experience, the better chance they have of finding successful and rewarding careers. That's why it's important to ensure that the traditionally gender-specific Career and Technical Education courses and programs are welcoming to both female and male students.

With that goal in mind, this year we have been visiting schools around the state interviewing teachers and looking for fresh ideas about attracting and retaining nontraditional students. We are pleased to be able to help teachers share their experiences and their successes with others.

This is not a scientific study. We have looked at enrollment data to find classes with significant numbers of nontraditional students, but there are far more of these classes than we can possibly investigate. We won't be able to interview every successful teacher, only a few who have time in their schedules to talk to us. We hope their experiences will be interesting and even motivating to others. We would love to continue this work, visit more schools, and talk to more teachers. If you are interested in sharing what you have done, please let us know.

## FIRST Robotics & TSA Bring Women To STEM

At Hickory High School, I had the opportunity to talk to two female students, Sabrina Pardus and Lacey Reynolds, and their technology teacher, Gina Nakahara. In the course of the conversation, I learned about Hickory's [Technology Student Association](#) (TSA) and [FIRST Robotics](#) programs and how they have inspired young women not only to pursue technology classes but to plan careers they would never have imagined without experiencing these programs.

When Sabrina Pardus first got involved in First Robotics, she had no technology experience and had only taken one CTE course in middle school. She considered herself more of a science and math person. When she first heard about First Robotics, however, she thought to herself, "What is this? It sounds so cool – building a robot?!" So she decided to see what it was all about. Because she enjoyed First Robotics, she decided to also become involved in TSA, and eventually went on to become much more than just "involved." She is now president of both her school and regional TSA chapters and has gone on to enroll in electronics classes, which she is "in love with."

Lacey Reynolds' experience is a little different. As a child, she spent many hours working alongside her dad fixing cars and other gadgets. She even used to come up with her own inventions. So technology was not completely foreign to her, but she did not expect CTE to take such a central place in her high school experience. However, she was immediately drawn to the FIRST Robotics program and decided to get involved. With some encouragement from Gina, she decided to also join TSA: "I really love TSA. It's a big commitment but it's really worth it." And like Sabrina, she went on to enroll in technology classes.

## FIRST Robotics & TSA Bring Women To STEM

Both Lacey and Sabrina told me how TSA and First Robotics have influenced what they want to do after high school. Sabrina believed that she would go to medical school as her mother wanted; she never considered engineering and says, "I didn't think I could do technology." After her experiences with TSA and First Robotics, she states, "I have changed 360." Lacey always knew that the field of technology was important to her, but she never considered making a career of it; she had always leaned more toward biology. Today, however, both Lacey and Sabrina have other plans. Both have been accepted into engineering programs at the colleges of their first choice. While they recognize that pursuing engineering may be challenging for women, they don't let that get in the way: "We can see it will be harder to be women in the engineering fields. But this has given us the confidence to be proactive...I know I am okay in the future because I really got hands on experience." They are inspired by and plan to follow in the footsteps of Hickory High School TSA/FIRST Robotics alumni who have made careers in this field.

Today, TSA at Hickory High is a thriving student organization due to the enthusiasm of teachers, dedicated students, and a supportive community. But it wasn't always that way. When Gina Nakahara came to Hickory and was assigned to take on the TSA program, it lacked that extra something. She was a new teacher, but also a risk taker, so she decided to enter her basic class, of students who were really just learning to draw a straight line, in a TSA architectural modeling competition. Needless to say, the idea of competing with much more experienced students was daunting for them. However, they placed second in the state out of 30 teams. Inspired by this, they raised the money on their own to travel to Chicago to compete in the TSA nationals. Two of the team members ended up making careers in engineering. Erin Burdick completed an engineering degree at VA Tech and is now working for an architectural firm. Jim Novak is in his third year in civil engineering at ODU.

Gina proudly reflects on this --

"They started in my class. They went to Chicago with us and now they are helping the world. When they started, they didn't have an idea. Jim was a band kid. He thought he was going to get into music. Erin loved dancing and thought she was going to go into business. And they are both now in engineering doing worldly things. It's amazing how these programs can affect

### What is FIRST Robotics

**FIRST Robotics** combines the excitement of sport with the rigors of math, science, and technology. Under strict rules, limited resources, and time limits, teams of 25 students or more are challenged to raise funds, design a team "brand," hone teamwork skills, and build and program a robot to perform prescribed tasks against a field of competitors. It's as close to "real world" engineering that a student can get. High-school students get to: learn from professional engineers; build and compete with a robot; learn and use hardware and software; be exposed to design, project management, programming, teamwork, and strategic thinking; earn a place in the Championship; and qualify for college scholarships.

[Read more about FIRST Robotics](#)

Schools in over [40 Virginia school divisions](#) have **FIRST Robotics** teams. Here's some advice about [how to start a team at your school](#).

Read about the Hickory High School team:

[The Hawk Collective](#).

people. And that makes me feel so good. This is why I'm here. I just feed off of this and I want to do more. I am so rewarded by this – right here."

Shortly after this first TSA trip to Chicago, Gina discovered FIRST Robotics and immediately knew that it was a perfect fit for her students. This was confirmed when at their first competition in 2008-09, Hickory High won Rookie All-Stars at the state competition because of their wholehearted participation in the full range of FIRST Robotics activities. This year, a new team from Princess Anne High School in Virginia Beach took Rookie All-Stars at the Virginia FIRST competition held in Richmond in April. Hickory High took the Team Spirit Award sponsored by Chrysler because they continue to bring such a high level of enthusiasm to the competition.

### WHAT IT TAKES TO RUN THESE PROGRAMS

Talking to Gina and her students reveals a lot about what it takes to start and sustain successful TSA and FIRST Robotics programs like these.

Success begins with a leader who has the enthusiasm and commitment to take ownership of the programs and drive them forward. Gina is incredibly excited about both programs

## FIRST Robotics & TSA Bring Women To STEM

and has such fun with them that she is able and eager to devote the energy that is needed to sustain them, even though it requires time in the evening and on the weekends. She is involved in everything from attending competitions and student activities, to grant writing and fundraising. Without her extra effort and the financial support it brings in, these programs can't survive. Gina's infectious enthusiasm is also crucial to recruiting students and the support of faculty and administrators. Gina finds her energy in her students' excitement and success: *"...the reason why I'm here as a teacher is that I want to see children succeed. I love it when they get something out of it --when the light bulb goes on even if it's not technology. I feed off of that. It's something I have always wanted to do. I have wanted to help children. If you're a teacher; you obviously have that in you. Why else would you be a teacher? It's in every teacher. They all have it. It's in their heart; they just have to pull it out."*

Without a strong team, a leader goes nowhere. Even one or two enthusiastic teachers cannot run these programs on their own. TSA and FIRST Robotics succeed at Hickory because of the efforts of many devoted faculty members. While Gina is the "CEO" of both programs, she relies heavily on her colleagues. Mr. Ed Welliver and Mr. Chris Slater from the Technology Department are major supporters of TSA. Mr. Richard Douglas and Mr. Richard dePaulo of the Math Department, Dr. Mary Hing-Hickman of the Science Department, and Mr. Chris Slater of Technology all play a big role in FIRST Robotics. *"You could do a FIRST Robotics team if you have one teacher, and have a team of about ten; [but] you can only focus on the robot. When we go in as a team, and the reason we won Rookie All Stars, is that we did everything."*

The team needs direct and wholehearted support from the administration. When FIRST Robotics began, the school principal, Dr. Woodley J. Koonce III, helped get the program up and running. He cleared administrative pathways, helped teachers prepare for interviews with the mayor, and supported grant applications and fundraising activities. The current principal, Mrs. Alfredia C. Turner, continues to back TSA and FIRST Robotics with enthusiasm, giving the team encouragement, space to work in, and publicity. As Gina says, "She is always there for us." Finally, division administrator, Johnny Moye who began as a technology teacher at Hickory, is also an enthusiastic advocate of both programs. Gina says, "I feel like I

can go to Dr Moye any time I have a concern. It's important to me as a faculty member to be able to do that. Otherwise I couldn't do this program."

It takes a village. TSA is supported by the school division because it is a formal CTE activity. The division provides funding for TSA first place winners to travel to national competitions, but it is still crucial for students to have support from their families and from community fundraising. In Gina's first year with TSA, eight students won second place in the state competition and wanted to travel to Chicago for the nationals. They accomplished this by raising the funds on their own.

FIRST Robotics is even more expensive than TSA and requires even more community support. This year's team is sponsored by NASA, Doherty Foundation, BAE Systems Norfolk Ship Repair, Lockheed Martin, Maersk Line Limited, and Jo-Kell Inc. The team also relies on parents and community members to do everything from helping with the build to providing transportation to supplying dinners for students who work on projects after school. Fortunately, the excitement of the competition is contagious and parents and community members find that supporting technology competitions is as exciting as supporting the football team.

*"We will have so many parents volunteer to bring food. They'll make homemade dinners. We have chili or spaghetti. Everybody works so hard and works so well together. We also have parents here to help us. Not just teachers. Her dad does the shipping. Her mom donated flags. Every parent is doing something. It's everyone working together that makes this successful. We have parents who don't even have kids in the program who help. Mr Keller is a retired engineer who doesn't even have kids in the program."*

---

FIRST Robotics programs are active in over 40 school divisions in Virginia, from Northern Virginia to the far Southwest. They generate enthusiasm from students and parents and the community because they are enormous fun while at the same time providing real learning experiences that carry on into the classroom, into postsecondary education, and on to work. These programs are one key to bringing students into STEM and return real reward for the investments that they require from school administrations and the community.