



## A Student's Path from TSA Competitions to a STEM Career

TSA alumnus Derek Schacht believes his participation in TSA's *System Control Technology* contest greatly influenced his college major and career choice. His involvement in TSA began in 6th grade and continued through high school. He competed in the *System Control Technology* event each year, advancing his knowledge and winning on the national level as a senior. Derek attended Virginia Tech and obtained his Bachelor of Science degree in computer engineering. Derek has been employed as a Tactical Software Engineer in the Electric Boat Division of General Dynamics since graduating from Virginia Tech.

When asked how being in TSA helped prepare him for a career in engineering, Derek had this to say: "*System Control Technology* gave me the first glimpse of the capability that devices gain when they have a computer integrated into their design. TSA's *Problem Solving* showed me that the simplest of materials can be combined into a functional device in which creativity and time are the only limits. Additionally, the *Structural Engineering* competition taught me to consider all aspects of a problem before making a design."

## Success Beyond the Classroom: One Chapter's Entry Leads to Patent

TSA provides a pathway for students to solve real-world design and engineering problems. At a recent national TSA conference, a TSA chapter from High Point Regional High School in Sussex, New Jersey won first place for an entry in the Electronic Research and Experimentation event. The chapter's entry was a Pressure Sore Relief System (PSRS) for use by bedridden patients.

A judge for the event suggested to the students that their idea had the merit and depth deserving of a patent. With their teacher's guidance, the students formed their own LLC (Limited Liability Company), "No Gadget Too Complicated." They officially filed for a patent with the United States Patent and Trademark Office and received a patent.

Brian Drelick, High Point Regional High School technology teacher and TSA advisor, said "From a teacher's perspective, this process has been terrific. My students are learning and applying STEM concepts to solve real-world problems."

## For more information about TSA

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## Supporting Teachers Inspiring Students



## Technology Student Association

[www.tsaweb.org](http://www.tsaweb.org)



## What is TSA?

The Technology Student Association (TSA) is a national organization devoted exclusively to the needs of students in science, technology, engineering and mathematics (STEM). Open to young people enrolled in or have completed technology education courses, TSA's membership includes over 190,000 middle and high school students in 2,000 schools spanning 48 states. TSA partners with universities and other organizations to promote a variety of STEM competitions and opportunities for students and teachers. TSA is supported by educators, parents and business leaders who believe in the need for a technologically literate society. From engineers to business managers, our alumni credit TSA with a positive influence in their lives.

## TSA's Mission Statement

The Technology Student Association fosters personal growth, leadership, and opportunities in technology, innovation, design, and engineering. Members apply and integrate science, technology, engineering and mathematics concepts through co-curricular activities, competitive events and related programs.

## Meeting STEM Criteria Through TSA

Education directives at the federal and state levels focus on providing avenues for initiatives such as STEM. TSA helps middle school and high school teachers meet the criteria for STEM education goals through existing programs that include technology activities, competitions, leadership and teamwork for students. TSA programs enhance classroom learning and can also be coordinated as co-curricular activities.

## TSA Middle School and High School Competitions

TSA student members have the opportunity to compete at exciting state conferences and the annual national TSA conference. All TSA competitions—60 middle and high school events combined—are correlated with national science, technology, engineering and mathematics standards. Expert judging by technology educators and industry representatives inspires the best from participants. Students can work individually or as a team in such competitions as:

### Sample Middle School Events

Agriculture and Biotechnology Design  
Career Prep  
Video Game Design  
Go Green Manufacturing  
Structural Engineering  
Website Design

### Sample High School Events

Animatronics  
Computer Aided Design (CAD),  
Architectural and Engineering  
Desktop Publishing  
Flight Endurance  
Scientific and Technical Visualization (SciVis)

## TSA'S National Service Project Helps Teach Social Responsibility



During the school year, TSA student members, teachers and local TSA communities raise money to help fund vital research, education, advocacy, and patient services of the American Cancer Society.

## Additional TSA STEM Programs and Competitions Focus on STEM

**TEAM+S** TSA coordinates the **TEAMS** (Test of Engineering Aptitude, Mathematics and Science) program. This national annual high school competition encourages students to work collaboratively and apply their math and science knowledge in practical, creative ways to solve real everyday engineering challenges.

**UNITE** With funding from the U.S. Army Educational Outreach Program (AEOP), the **UNITE** program targets high school students historically underrepresented in STEM fields and helps prepare them for college. This summer program, held at a select number of colleges and universities throughout the US, introduces students to an academic experience that closely parallels that of a first-year student in a university engineering program. Through classes, hands-on activities, and team-based learning, students explore the connections between math and science and real-world applications.



Funded by the U.S. Army Educational Outreach Program (AEOP), **Junior Solar Sprint** offers resources to empower teachers, mentors, and other community members to engage 4th-8th grade youth in the designing, building, and racing of model solar cars. JSS challenges students to use scientific know-how, creative thinking, experimentation and teamwork.



The TSA **VEX Robotics** Competition provides students with a hands-on co-curricular competition for learning about science, technology, engineering and mathematics through robotics. TSA VEX Robotics tournaments are conducted in conjunction with TSA state conferences, followed by a championship event at the annual national TSA conference.



Find out more about TSA at [www.tsaweb.org](http://www.tsaweb.org).