

**TEAM 3966
THE L&N STEMPUNKS**

CHAIRMAN'S AWARD ESSAY

2017



FRC TEAM 3966, THE L&N STEMPUNKS

The mission of our team is to reach out to local schools, daycares, and organizations and inspire the East Tennessee community to become involved in science and engineering. We aspire to share our passion for FIRST programs and STEM education with the help of our families, friends, and sponsors. In doing so, we hope to empower the next generation of engineers, scientists, and business leaders through the vision of FIRST.

TABLE OF CONTENTS

Contents.....	i
How Has FIRST Impacted Our Team.....	iii
How Does FIRST Impact Our Community.....	iii
Spreading the FIRST Message Through Innovation.....	iv
Serving as Role Models and Inspiring Others.....	iv
Helping to Start Other FRC Teams.....	v
Our Team's Initiatives to Form Other FIRST Teams.....	v
Helping Other Teams Progress Through FIRST.....	v
Mentoring Other FIRST Teams.....	vi
Our Partnerships with Sponsors.....	vi
Broadening Our Impacts Since 2012.....	vii
How Would We Explain FIRST to Someone Who Has Never Heard of It.....	viii
Other Information About Our Team.....	viii
Chairman's Essay.....	ix
Acknowledgements.....	xix

CHAIRMAN'S AWARD SUBMISSION

How Has FIRST Impacted Our Team?

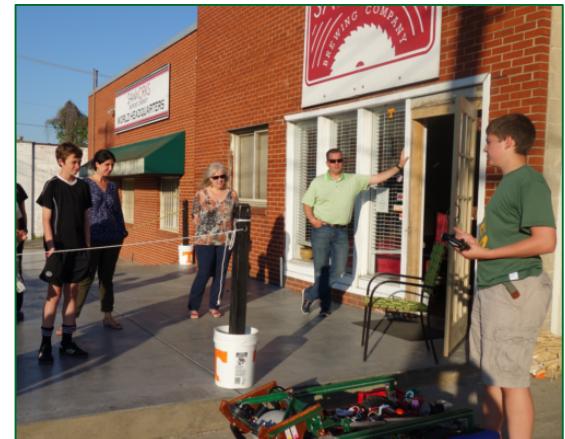
With our team's departments ranging from business to programming and electronics, we attract participants of all interests. Our students are given many opportunities to step into leadership positions, preparing them to be leaders in their communities. Our alumni have successfully entered STEM fields, with many getting involved with STEM careers upon graduating, and one specifically receiving a full scholarship from the National Science Foundation for mechatronics engineering.



Our team at the 2016 Battle for the Bluegrass

How Does FIRST Impact Our Community?

We initially engaged our community at events like the Children's Festival of Reading and family engineering nights at elementary schools. We've since established a name for ourselves and often receive invites to demo or display booths representing FIRST at events. Our team is collaborating with the Change Center, an organization working on helping kids to have fun and safe environments to keep them off the streets. Together, we set up an FRC practice field for all of East and Downtown Knoxville.



Having fun showing off our robot with our community.

SPREADING THE FIRST MESSAGE THROUGH INNOVATION

Our team was recognized for our social media program when we won the 2016 Media and Technology Innovation Award at FIRST Championships. We're also focused on influencing STEM legislation, like when we attended the FIRST National Advocacy Conference in Washington, DC in 2015 to speak with our Congressmen and Senators about funding programs like FIRST. We also spoke in front of the Tennessee Department of Education about financing more FIRST teams and regionals in our state in July 2016.



SERVING AS ROLE MODELS AND INSPIRING OTHERS

Our team leaders act as role models for our members. Our student leaders are all taking multiple AP courses, on top of managing their sub teams. We aim to inspire our newer students to take on more responsibility by becoming these team leads. Students know that with hard work and dedication, they too can become a leader! Our team emphasizes that there are no failures, that there are only learning opportunities, and we strongly encourage kindness and cooperation between members in all situations.

We won the 2016 Media & Technology Innovation Award.

HELPING TO START OTHER FRC TEAMS

This year, we've been assisting a re-established FRC team, helping them with fundraising and more. We hope to use the skills acquired through this assistance and collaboration to begin establishing new FRC teams in our region. We also opened a new practice field in Knoxville with the goal of making robot testing accessible to teams on any side of town, not just West Knoxville. With these steps, we believe we are laying the baseline for starting new teams in our area.



Talking at the District Magnet Showcase with our sister FLL team.

OUR TEAM'S INITIATIVES TO FORM OTHER FIRST TEAMS

At our outreach events, we show FIRST as a challenging and rewarding program for students and encourage them to pursue studying STEM fields. We have a close relationship with a local elementary school, and after they saw the positive effects of FIRST on our students, they decided to start a Jr. FLL team. We've helped Jr. FLL Team 8262 from their start, offering guidance and mentorship. We are currently looking to begin a FTC team in our community to broaden the impact of FIRST!

HELPING OTHER TEAMS PROGRESS THROUGH FIRST

We continue to support other teams in building vital team management and business skills by running and hosting the annual Smoky Mountain Regional Business Summit for the last three years. At the Summit, we hold sessions on various business related topics and invite other teams to present as well. For instance, we invited the Secret City Wildbots to share their expertise on Scrum project management with attendees at this year's event. We believe it benefits all teams to share and grow together.

"WE BELIEVE IT BENEFITS ALL TEAMS TO SHARE AND GROW TOGETHER."

MENTORING OTHER FIRST TEAMS

Over the past two years, we've increased our mentoring focus, mentoring FRC Team 6517, FLL Team 18907, and Jr. FLL Team 8626. We visit both Team 18907 and 8626 every week, guiding students through the engineering and design process, and helping the teacher sponsors navigate through competitions. For FRC Team 6517, assisting them particularly on business aspects of the team, ensuring they are financially stable through this rookie year and become a sustained East TN team.

OUR PARTNERSHIPS WITH SPONSORS

Our team has a variety of sponsors, with some of the largest being Knox County Schools, Bechtel, and the Clayton Foundation. However, our team looks for more than monetary sponsorships. Some of our other sponsors do things like fabricate our parts, powder coat our robot, and print our t-shirts! These community partnerships are essential to keeping our team running. Without our top & closest sponsor, Henry & Wallace, we would have nowhere to work!

One of our growing strengths has been maintaining strong relationships with our sponsors, old and new. We make it a point to stay connected with all of our sponsors through a team newsletter sent out weekly during the season and monthly during the off-season. We invite them to big team gatherings, where they can be alongside us as we share our excitement for STEM and the FIRST program. We've even brought our robot out to demonstrate at company events to show our appreciation for their support.



Our 2017 Diamond and Platinum Sponsors

BROADENING OUR IMPACTS SINCE 2012

In the beginning, our team was very small, with only eight members. We were unaware of the potential impacts that we could have on our community through outreach. Over time, we discovered the excitement for STEM education and robotics that we could inspire in elementary and middle schoolers in showing them our robot and teaching them about FIRST. We've made huge strides in the short time we've been around, becoming the region's go-to resource on business and media aspects of FIRST.

HOW WOULD WE EXPLAIN FIRST TO SOMEONE WHO'S NEVER HEARD OF IT?

Most people see robots. FIRST students see their hard work and innovation. FIRST is unique because students benefit from real world experiences, gaining essential skills beyond engineering such as collaboration and cooperation. They develop character in their interactions with their own team and other teams by practicing Gracious Professionalism. FIRST is about more than robots, it's about getting well-rounded skills to serve you in all areas of life. FIRST is for everyone!



An example of our outreach booth setup.

OTHER INFORMATION ABOUT OUR TEAM

In just the last couple years, we've gone through struggles such as maintaining a consistent teacher sponsor and lab space, which have made team viability an issue and threatened our ability to continue with FRC. These difficulties we've overcome have taught us the importance of perseverance and support from our community. However, these challenges have also taught us a lot about our purpose as not only students involved in FIRST Robotics, but young individuals pursuing STEM fields.



CHAIRMAN'S AWARD ESSAY

Our team's goal is to inspire change in the world through a commitment to others.

Whether we are inspiring our own students, FIRST teams, or other members of our community, it is essential to support those who support us. We are dedicated to helping our community because we understand that our team could not exist without their help.

Aiding our community is the heart of our team.

Since the beginning, we have worked towards growing our business and public relation skills, as well as helping other teams to do the same. We have made this both a

local and national effort, as we believe it is

crucial for FIRST teams to have sustainable

business and communication practices that can

fully support and grow their team from season

to season. Our team has been recognized for

our skills in these areas, winning the Entrepreneurship Award at the 2016 Rocket City

Regional, and the Media and Technology Innovation Award at the 2016 FIRST

Championship. We also won the Imagery Award at the 2015 Smoky Mountains Regional.

We believe that other teams should gain such skills and hopefully win these awards themselves.

**"OUR TEAM'S GOAL IS TO
INSPIRE CHANGE IN THE
WORLD THROUGH A
COMMITMENT TO OTHERS."**

We run and host the Smoky Mountains Regional Business Summit, where our students and guest speakers present to attendees on topics that are often overlooked on many FRC teams. Our team far too often heard "we don't have a business team," so we aimed to change that. The Summit gives us the opportunity to work hands-on with teams by facilitating discussions, educating on our areas of expertise, and giving attendees a place where they can network with students from around the region. The third annual Business Summit (in 2016) had 77 attendees from three states, and we hope to host even more people in 2017 as we celebrate and share the diverse knowledge from teams region-wide.



Teams attending the 2016 Smoky Mountains Regional Business Summit in downtown Knoxville.

To help other teams build these important business and communications skills, we make all of our work publicly accessible to anyone who wishes to view it. This includes all of our award essays, the code to each of our robots, and all of our team's branding

resources, such as our logos and shirt designs. By making our work available, we serve as a library for other teams, providing tools for them to learn and improve on their own skills.

In supporting FIRST locally, we have mentored FLL Team 18907 for the past two seasons, with them placing in the top fifteen at a Knoxville regional this year. This past fall, we began mentoring Jr. FLL Team 8262 as they began their first year. In addition to mentoring others, we also invite homeschooled and younger students to join our team if they are interested in the FIRST robotics experience. As an example, there are a few middle school students on our team who wanted to participate in FIRST, but had no programs at their school. Encouraging them to join us before they reach high school means they can foster skills geared towards their interests earlier, and help them receive a more in-depth experience with FIRST.



Talking to students at Y12's Introduce a Girl to Engineering Day.

This season, we have had a close hand in assisting FRC Team 6517. Their school previously had a team in 2014, and we have been helping them get back on their feet. We have invited their entire team to our lab, offered them parts, hooked them up with sponsors, and answered their questions when they have them to ensure that their rookie

season is successful. We will continue to work on strengthening our region's FIRST programs, providing materials and assistance wherever fit.

Besides helping out Tennessee FIRST efforts, our team volunteered at the inaugural TVA North Georgia FLL Robotics Competition this past fall, helping as referees and

scorekeepers and teaching other high schoolers to fill those roles. As an event organizer

put it, "I am not exaggerating in saying that the event would have been a disaster without

their help...We had no other volunteers who could be

refs." With our help, the event was a huge success, and

FLL teams from around the region look forward to

attending the competition again in the future.



Having fun refereeing at the North Georgia FLL regional.

We have recently increased our advocacy efforts to include influencing federal and state legislation. In 2015, our team traveled to Washington, D.C. for the FIRST National Advocacy Conference. We spoke to staffers for Senator Lamar Alexander and Senator Bob Corker on allocating more state funding for afterschool STEM-based programs like FIRST. Beyond learning about the problems at hand, our team learned how to advocate for key issues on the behalf of an organization, raising awareness of existing challenges, and confidently speaking with elected representatives to influence their decisions.

The experience and knowledge we gained at the National Advocacy Conference has been essential for our advocacy efforts, which we have continued by speaking with the Tennessee Department of Education in Nashville this past summer. In an effort between US FIRST and TN FIRST, we were invited to speak on our experiences as an FRC team due to our recognizable presence in the community.

The goal of our meeting was to gain the Department's favor and opinion on allocating funds to build a FIRST grant program in Tennessee. This grant would help start more competitions, pay team registration fees, and provide stipends to FIRST coaches for the numerous hours they dedicate to their teams.



"...WE HOPE THAT THE GRANT PROGRAM WILL MOVE FORWARD AND THAT WE CAN CREATE MORE TEAMS IN OTHER AREAS OF TENNESSEE."

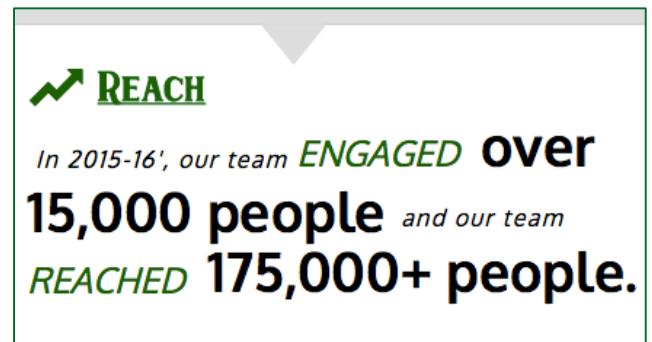
Speaking with the Department of Education was the first step in opening up a conversation with state legislators such as Senator Randy McNally who runs the Finance, Ways and Means Committee in the Tennessee General Assembly. Through this grant effort, we can become more effective in influencing legislation proposed in the state. By doing so, we can potentially encourage surrounding states follow suit in opening opportunities for students to participate in afterschool programs such as FIRST. We plan to follow up with

the state this Spring to put more pressure on the matter and to continue representing FIRST on similar policies in the near future. Overall, we hope that the grant program will move forward and that we create more teams in other areas of Tennessee.

As students involved in FIRST Robotics, the second cornerstone of our team's mission involves our continued efforts to support and promote STEM education. In order to be successful proponents of local STEM education, we not only have to engage in conversations among students of all ages, but also inspire educators. Our

team has continually collaborated with CURENT, an electrical engineering research department at the University of Tennessee, to coordinate "Family Engineering Nights" at elementary and middle schools around Knoxville. At these events, we talk with students, families, and teachers about the impact that FRC has had on our team. We also run demonstrations of our robots and host booths with information about our school and FIRST programs.

Every year, our team represents our school, the L&N STEM Academy, at the Knox County Magnet Showcase, where magnet schools around the district come together to show off their programs. We encourage students to attend our school and our sister



Stats from our 2016 winning Media & Technology Innovation Award

school, Green Magnet Academy, which have a heavy STEM focus. At this event, we demonstrate the positive experiences available for students to pursue their interests and show how they can gain valuable and applicable skills from a STEM education. Our efforts continue at the annual Back to School Bash sponsored by Mayor Tim Burchett, where we explain to parents and students the education foundation that FIRST programs build for students.

We greatly appreciate our community's support, and we continually work to give back in any way possible. We consistently keep in touch with Knoxville-based organizations to know when they need us for their events. We want to inspire others to work in STEM-related fields, and show people what can be achieved through hard work and determination. One of the best ways to reach out to our community is through the voice of our local

businesses and organizations. We have worked with the Tennessee Valley, the Knoxville Utility Board, CNS-Y12, and the Knoxville Ice Bears, among others, to reach the most people possible where we live. While state fairs and hockey games may not be traditional places to find FIRST Robotics, it is important to have a presence there and reach an audience that is not familiar with FIRST.



At the 2016 Tennessee Valley Fair with other local teams.

This season, we have begun helping a local community effort to start a project called the Change Center. The Change Center is a safe, strategically located, downtown partnership facility that provides recreational activities, leadership development and job initiatives for teens. While the Center is not yet complete, we have been helping them get the space ready. The Change Center has also generously allowed us to host a community practice field in their space for Knoxville teams. We utilize an AndyMark field perimeter owned by Oak Ridge National Laboratories to allow teams to come and practice driving and programming their robots before they compete.

FIRST has taught us the importance of giving back to the community to build stronger ties and create closer relationships with those around us. Last season, our team faced a huge obstacle as our school had grown too large and needed our lab space for a classroom. We searched for a lab space outside of school until a developer from downtown Knoxville approached us to donate a work space. Due to our community presence, he already knew about our team and FIRST, and was more than willing to help us find our new home.

As a five year team, we take pride in our accomplishments, and look to the future in expanding our positive impact. While we are pleased with our efforts so far, we know that there is much more we can continue to do in spreading the mission of FIRST. We recognize

that we have to give back to the people who have supported us so much, which requires a longstanding commitment to our community, and the dedication of our students to serve where we are needed.



GET STEMPUNKED!

ACKNOWLEDGEMENTS

Our team would like to recognize the generous support from our sponsors:

Henry & Wallace

Bechtel • Knox County Schools • Clayton Family Foundation

Leidos • UT-Battelle • Comcast NBCUniversal • Radio Systems Corporation • Pilot Flying J

Consolidated Nuclear Security • Salon Studios • Steel Plate Fabricators • Riot Printing Company

Alcoa • Tennessee Valley Authority • Northrop Grumman • Drayer Physical Therapy

DeRoyal Industries • Cherokee Millwright & Mechanical • Dassault Systèmes • SwipedOn