



TEAM RUSH ROBOTICS 2014 CHAIRMAN'S AWARD

This Clarkston, Michigan based FIRST FRC High School Robotics team housed in the Clarkston High School tirelessly drives to achieve their mission supporting Science, Technology, Engineering and Math (STEM)

www.TeamRUSH27.net

*A FIRST FRC
Robotics Team*

www.USFIRST.org



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Chairman's Award

"Life is a journey, not a destination." Ralph Waldo Emerson.

Eighteen years ago nobody would have thought a robotics competition, meant to be a class capstone project, would turn out to be a life changing and career-molding journey. Team RUSH (Respect, Unity, Spirit and Heart) has grown into a full-circle team requiring high expectations, grit and commitment from all, especially our conscientious students that pledge to change culture one person at a time.

Our journey has shaped our Mission: To transform culture by developing a collaborative network of self-confident leaders who inspire and excite the global community to value and celebrate STEM. By advocating and servicing the needs of others (kids/adults/teams/school), RUSH has become a year-round academic team. We would be a different team if we ONLY built a robot.

We are a TEAM that learns from our failures (FAIL FASTER, LEARN MORE, FOCUS and EXECUTE)! Our successes and failures have made us stronger allowing others to grow and sustain. We are committed to documenting and sharing with everyone! We want ALL kids to live FIRST and be committed to culture change! We use a unique global community engagement system, create leaders and are passionate about making all FIRST teams sustainable.

Community

Our "community journey" started with parades and local events developing into demonstrations from the Taste of Clarkston and Tons of Trucks to sponsoring Buddy Basketball and Baseball for special needs kids. It evolved into RUSH students getting real-life experience by organizing, participating and running 300+ community events ranging from elementary robotics clubs and Science Day demonstrations to collecting and distributing school supplies for students in need. Realizing culture change, students become empowered to run these community supported events creating a student-engaged atmosphere that inspires young leaders.

CSMTech (Clarkston Science, Math and Technology), our STEM academy, has reaped the benefits of curriculum alignment with FIRST through RUSH using 15 technology opportunities for students. The most recent is a 60 hour Robotics Programming class taught and developed by RUSH students with mentor support. Students learn LabView on FTC and FRC robots! A student experienced his auton finally working and said, "It taught me patience and to keep on trying!"

Taking a detour from local impact, RUSH came up with a unique way to spread the message of FIRST to start new teams. Since our county is saturated with teams, we focused on the entire state. In 2010 we started presentations in our statewide "robotics tour." We "schooled" the Michigan Department of Education (MDE), School Boards and PTA conferences on FIRST. We met with our state legislators to ensure they knew about FIRST. In the past 5 years, we presented at more than 50 events including the Governor's Education Summit! In 2013, after years of pushing, we were finally asked by MDE to initiate a program for teachers to receive Continuing Education (SBCEU) credits to be granted for coaching FIRST teams. This assisted in Michigan rookie growth from 29 to more than 80 teams in 2014! SBCEU's are now offered along with financial stipends for coaches through our Governor.

With great success in Michigan STEM advocacy, RUSH took flight to Washington, DC. In 2009, we initiated contacts in DC, networking with associations that advocated for kids and STEM. Our



two times per year visits included meetings on No Child Left Behind, eRate (money for technology), ATTAIN and other dedicated STEM programs. In 2013, four teams (California, New Mexico, Minnesota and Virginia) attended our first National Advocacy Conference (NAC). For three days STUDENTS trained to advocate on Capitol Hill to support FIRST, kids and STEM. In 2014, partnering with FIRST, our NAC is open to ALL teams. Congressman and Senators frequently said, "We don't see students as versed as you." When asked what we can do further, their unanimous response: "Do what you are doing and keep coming back!"

From advocacy to our own turbulent roads of sponsorship, the loss of our major corporate sponsor taught us we needed to diversify. If one sponsor drops, we are not annihilated; we just need to pick up another sponsor. This resulted in the RUSH Regatta. It was created to raise money, but became an exciting community summer engineering challenge and entrepreneurial fundraising experience allowing us to diversify our sponsor base and guarantee our sustainability. In 2013, this cardboard and duct tape boat race raised \$36,000 (192 sponsors).

Developing synergistic partnerships with sponsors is an integral part of our team success and growth. Students receive internships, network and develop personal relationships with professionals! In 2009, our relationship with Genisys Credit Union started out as a check, evolving into RUSH at their community events and they participating in ours (judging our Parade and Regatta). This led to our recognition as the Outstanding Community Service Organization by the Detroit Pistons in 2012. Genisys has been so enamored with RUSH, they used our partnership blueprint in sponsoring five more teams in Michigan and two in Minnesota with RUSH as the Role Model Team. Genisys stated, "Our involvement with Team RUSH allowed Genisys to learn about FIRST. The program provides crucial life skills. The commitment to give back to their community to make a difference is impressive!"

Creating Leaders

RUSH students are making an impact on this world. Training these new student leaders is a must and required for sustainability. Growth depends on student training, teambuilding and time management. Through public speaking workshops, personality training and resume writing (not to name the technical training), RUSH students are prepared to graduate as experienced educated professionals. Replacing themselves is their responsibility therefore students demand training, mentoring, and leadership experiences. Students are placed in positions to best encourage THEIR personal growth so they learn and develop. With many safety nets in place (mentor-mentee, student leadership, team and sub-team captains), students are pushed out of their comfort zone. They know it is okay to fail as long as they learn from the experience!

RUSH students run summer robotics camps, FLL and FTC support and community presentations. The goal is to put students' training to use exciting younger kids about STEM and RUSH, increasing the demand for robotics teams! In 2013, Clarkston robotics camps serviced 100+ students, FLL teams grew from 7 to 12 and RUSH students started six new FTC teams. These FIRST teams were supported by RUSH students and through Drop-ins, where the doors were open for support, resulting in RUSH students becoming heroes to younger students! This growth in three levels of FIRST can be felt as 77% of our RUSH students come from an FLL or FTC experience!



Team Sustainability

With FIRST's push for new teams, RUSH identified sustainability as an issue. In 2009, our Toolkit for Success started as a few pages of tips, given to Rookies in Michigan. In 2010, the Toolkit was developed further and the goal was to update, modify and publish the 250+ page, Ten Chapter resource. In 2011, we were uploaded onto the AndyMark and FIRST website. The number of registered downloads (not including thousands of non-registered downloads) to date is 1,075 teams (461 rookies including 46 states and 10 countries). In 2011, it was also accepted as an iBook. In 2012 RUSH added two more chapters (Students and TEAM) and Chapter 13 on Advocacy is in the works.

Providing one resource was not enough! To reach deeper, we needed personal CONTACT. Weekly Rookie Conference Calls (WRCC) became a part of our culture. Since 2011, every Tuesday during build season RUSH co-hosts Michigan WRCC with FRC 2337. They are based on the Toolkit Chapter 10. We post the notes online, on Facebook and tweet them. This has impacted teams and states beyond Michigan (New York in 2013, Minnesota in 2014). The WRCC impacted 100 teams (91%) of Michigan Rookies since 2011, and 44 of the 83 teams so far in 2014.

Seeing a need for direct mentoring for FIRST teams, RUSH developed mentorship through electronic discussions and Skyping teams into our shop, to opening our doors. In 2011, FRC 3534 needed a weekend build site. We brought them into our shop with their administration visiting and ultimately supporting them. This year we are using Skype and conference calls, allowing teams to come directly to us without traveling, specifically benefitting FRC 5230 and FRC 4995.

RUSH "mentors" the students until they are ready to fly on their own and this year, they took off! In 2013, RUSH students took the reigns of leadership and sustainability and wrote 3 beginning guides for LabView programming. In 2014, they created videos and added Office Hours (students wait online to help others). This impacted the far corners of Michigan with the next goal to expand. The students were successful in getting other team's robots moving, feeling the excitement of STEM permeating from our shop to theirs!

Resources and Calls were STILL not enough! We needed to physically meet with teams so we went on the road with sustainability workshops and all day Rookie Mentor camps. Understanding the need for more skilled coaches, in the past five years RUSH has conducted a total of 21 camps and workshops including Baltimore, MD, Duluth, MN, Washing, DC, St. Louis, MO and Atlanta, GA. The results and personal feedback from these boot camps fuel our passion and drive us to do more.

To make our journey a full circle, RUSH students after graduation are expected to: sponsor a FIRST Team, help a teacher, or become a mentor to fulfill the 10-year rule. As a result, most RUSH Alumni have a FIRST Experience after graduating, 76% of our mentors are alumni.

Our journey through Global Community Engagement, Creating Leaders and Making Teams Sustainable is the path to culture change! The RUSH journey has had itinerary changes, but the final destination of culture change has ALWAYS remained the same. Our core values: RESPECT the challenges of FIRST, UNIFY our resources for others, focus on the sustainability SPIRIT and instill deep in our HEART the motto of "Never Give Up." People ask, "Why do you do so much?" Our answer is simple, "Because it is the right thing to do." As best said by St. Francis of Assisi, "For it is in giving that we receive."



Chairman's Mini Essays

Mission Statement

To transform culture by developing a collaborative network of engaged, self-confident leaders who inspire and excite the global community to value and celebrate STEM.

1 - What effect does the FIRST program have on Team Participants?

RUSH creates leaders, inspires students to find their passion and highlights the importance of giving back to the community. An academic cooperative safe team environment gives students self-confidence and awareness of a global society. RUSH students gain real world experience through trainings, internships and presentations at world renowned conferences. Our students earn FIRST scholarships (\$1M+) and return as mentors (76% current mentors are alumni). 100% of students continue to college or military.

2 - What is the impact of the FIRST program on your community?

RUSH strategically inspires and engages our community, especially youth, to value STEM. We host camps, donate school supplies, drive robots in charity walks, intro FIRST to the Detroit Pistons, sponsor special needs teams and give toiletries to those in need. Through these 70+ annual events, we create partnerships and relationships aimed at changing culture by expanding the influence of STEM. For example, we incorporate fifteen FIRST technologies in CSMTech, our integrated project-based STEM program.

3 - What innovative methods do we use to spread the message of FIRST?

We have three annual innovative events: 1) Our RUSH regatta excites kids and adults as they watch students race in cardboard and duct tape boats garnering community support by attending and sponsoring (192 sponsors-\$36,000), 2) Our Holiday Lights Parade mandates STEM based themes for floats and 3) Our growing National Advocacy Conference invites FIRST teams to Washington, DC to advocate for STEM and federal education legislation. Teams gain communication skills and confidence by impacting policymakers in Congress.

4 - How do our team members act as role models and inspire other FIRST team members to emulate?

Our members lead by example on and off the field, creating programming and robot tutorials and hosting workshops. At competitions we help other teams in their pits, build relationships with other teams' students and motivate teams exhibiting our core values by giving RUSHies. We have a proven continuous improvement process and we help others adopt it. Experienced students mentor newbies so leadership opportunities are infused with teamwork and collaboration. Our shop is open year round for teams who need help.



5 - Describe the team's initiatives to start other FRC teams

By leading statewide workshops at the Michigan Governor's Education Summit, Michigan Association of School Boards, Network of Michigan Educators and Michigan Association of School Administrators, we reach superintendents, teachers and administrators to give them a complete toolkit to start their own FRC teams. We attend events like the YES Expo and implemented continuing education credits for FIRST teacher coaches in Michigan to start and support FRC teams leading to the Governor's grants in 2014 (2013 - 29 Michigan rookies, 2014 - 80+ Michigan rookies).

6 - Describe the team's initiatives to help start or form other FIRST teams.

To create a continuous stream of future students for FRC, we've impacted 386 K-8 students in our FLL Summer Camps in 4 years. We created and supported seven FLL teams in 2012 and thirteen FLL and eight FTC teams in 2013. We host in-house resources and mentoring for these teams. We lead workshops at the International MENSA conference to provide resources to students and parents on starting FIRST teams. We run statewide Michigan PTA workshops, giving parents a hands-on FLL experience and resources to create teams.

7 - What are the team's initiatives on assisting other FIRST teams?

Our goal is to make all teams sustainable. 1) We provide resources: Programming Guide, Kit Bot Resource, Twelve Chapter Toolkit For Success, Youtube Channel and FIRST Fundraising Vide, 2) We hold workshops (21 in the last five years) at our school and around the country including FRC, FLL and FTC sustainability seminars and all day mentor camps (796 people and 338 teams) and 3) We directly mentor teams. These initiatives provide teams a blueprint to operate more efficiently and engage the community to guarantee their sustainability.

8 - How does the team work with other FIRST teams to serve as mentors to younger and less experienced FIRST teams?

We partner with FRC 2337 to host Michigan weekly conference calls. We host mentor camps with FRC 74 in west Michigan and with Minnesota teams at the Duluth regional. We collaborated on video trainings as part of FIRST's Sustainability efforts with Senior Mentor Renee. We expand our reach by working with FIRST in Michigan as a mentor resource to FRC, FLL and FTC teams and assist with the FLL and FTC tournaments. We train and work side-by-side with other teams at our National Advocacy Conference (Five in 2013 with a goal to double it in 2014).

9 - Describe your corporate and university sponsors

We have 192 sponsors with 40 larger sponsors (fourteen engineering, two health care, nineteen local services and five from Alumni/Parents). We have 93% retention with our larger sponsors because of our substantive partnership. 152 smaller sponsors give less than \$500 each allowing us to increase our influence and guarantee our sustainability at the same time. In addition to monetary donations, our corporate sponsors also provide us with mentors, supplies and real world experiences like internships for students.



10 - What is the strength of our partnership with our sponsors?

We have collaborative two-way partnerships with our sponsors, regularly assisting with their events (parades, charity walks and more). We work closely with Genisys Credit Union expanding their sponsorship to seven more teams. We constantly involve and recognize sponsors via newsletters, social media and team events. We run demonstrations and present at sponsor events and open houses. Twenty Eight of our Alumni were hired by Sponsors. We use our Chamber partnership to find sponsors and develop relationships. In 2014, 93% of large sponsors returned.

11 - How would we explain FIRST to someone who has never heard of it?

FIRST is a life changing, team building, spirit enhancing, 300,000+ member international robotics program that inspires youth in STEM (Science, Technology, Engineering and Math). Each year embraces a new challenge where students and mentors design and build a robot athlete to play the game. Values of gracious professionalism and coopertition (competition + cooperation) are core, where students develop self-confidence, problem-solving, leadership and communication skills. All students can "turn pro" by joining the FIRST and STEM community.

12 - Other matters of interest to the judges

Due to the increased demand for elementary math and science presentations and clubs, we were asked to establish a Clarkston Robotics Booster Club to fundraise and assist team operations so the Clarkston Community can grow FIRST at all levels including Junior FLL.

Non RUSH Students can earn credit by attending competitions, impacting them, our school and our team.

We demonstrated and engaged 800+ educators from six continents with FIRST and STEM at the Harvard Project Zero conference.



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Pictures









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Making All FIRST Teams Sustainable