Rocky Mountain BEST

April 2019

Founded in 2010, Rocky Mountain BEST has been growing a free robotics competition for Middle and High Schools in Colorado. BEST stands for Boosting Engineering, Science and Technology and BEST Robotics, Inc (BRI) has 42 BEST hubs or chapters in 14 states. With continuing Colorado BEST expansion, the first Regional Championship at Metropolitan State University of Denver was awarded for 2017 bringing students from all over Colorado and possibly other states.

RM BEST is a BEST hub and all-volunteer nonprofit 501(3)(c) organization. Our mission is to "*engage, excite, and inspire students to pursue careers in science, technology, engineering, and math through participation in a sports-like science and engineering-based robotics competition.*" Teams bring cheerleaders, mascots and bands to the game. It's a combination of a ball game, a science fair and a chess game! The game is not just about robotics, but about teamwork, solving problems, meeting challenges and learning business skills. Previous game themes have been about aircraft manufacturing, delivering supplies to space vehicles, renewable wind energy, farming, mining, firefighting, and removing plastic from the oceans.

We begin the six-week competition with a **Kickoff** event in September. At **Kickoff,** all hubs reveal the year's game, distribute kits and materials teams use to build their robots and provide training sessions to help teams be successful. We demo the game, discuss the game rules, and provide all documentation for the rules and game field drawings. Training sessions provide more detailed information about the electronics and other parts and materials, programming, the Engineering Notebook, and the **BEST Award**. The notebook is a competition requirement and it is part of the BEST Award score. We encourage the teachers and mentors to recruit not only technical students, but also writers and photographers to create the best possible notebook.

Each competing team (one per school) receives two totes: one with consumables (i.e. – PVC, wood, metals and plastics nuts & bolts, etc.) and a second with VEX robotics electronics. The electronics have to be returned and are reused the following year. Students have six weeks to develop a strategy to play the game, design, build and test a robot based on the strategy, and write an engineering notebook describing the team's activities. They can only use the materials we provide and only the students can design and build the robot. The robot is created from scratch! **Practice Day** is five weeks after **Kickoff**. **Game Day** is in October six weeks after **Kickoff** at the Auraria Events Center and sponsored by the Metropolitan State University of Denver (MSU Denver). We hosted our second Denver BEST Regional Championship at MSU Denver in 2018 with schools from Colorado, Minnesota, North Dakota and South Dakota.

An optional element to the competition is called the **BEST Award**. In this competition, the students create a marketing presentation and a booth, and are also judged with interviews and spirit & sportsmanship criteria. The booth is based on the game theme and the students are expected to discuss the theme, and explain why their robot design was the best!

The BEST program encourages participation of underrepresented groups and places all of the schools in a level playing field. By providing the same materials

for all of the schools, one school does not have a monetary advantage over another. This ability to place all of the schools at the same level was shown with the 2013 game in which one of our middle schools outscored every other team two to one. We have hosted all-girls teams from St Mary's Academy in Englewood who excelled at both the Hub completion and Regional Championships. In 2018, 60% of the Colorado school teams were from schools with school populations with >40% free and reduced lunch program students.

As part of the competition, BRI requests teams provide statistical data on various demographics info, including student interest and future plans. In BRI's 2014 Annual Report, 58% of the participants plan to pursue Engineering, Science and Technology degrees. Of those students, 28% are girls and 43% are minorities. The BEST program does an outstanding job in getting under-represented groups participation. Evaluation results from the 2018 RM BEST students indicate that 69% of students reported that they were likely to pursue a career in STEM.

The game has brought over 1,000 participating students to MSU Denver since 2010. The

students are accompanied by siblings, parents, families, teachers, mascots and cheerleaders, so the actual visiting numbers are considerably higher. Our volunteers helped BEST expand in Colorado into four Colorado Hubs: Golden Plains BEST in northeast Colorado, SoCo BEST @TrinidadState in southern Colorado, Front Range BEST in Highlands Ranch, and RM BEST in the Denver Metro area. The 4 Colorado hubs hosted 65 school teams and over 900 students in 2018.

More information and videos may be found at www.rockymountainbest.org.