The "technician" and the "pit crew lead" of Nevis High School Robotics Team 3102 collaborate during a competition. There are currently 190 school robotics teams in Minnesota. Photo courtesy of Nevis Public School

A student technician of Nevis High School Robotics Team 3102 assists shows a conference attendee how to drive a robot during the School Excellence Showcase at the 2024 MSBA Leadership Conference in Minneapolis. Photo courtesy of Nevis Public School

Nurturing Tomorrow's Innovators

Nevis High School's robotics program offers students great challenges and greater rewards

By Olaf Netteberg, Mentor for Robotics Team 3102 at Nevis High School

If you have attended the MSBA Leadership Conference in Minneapolis in the past two years, you should have been approached by a robotics student and asked, "Do you want to drive a robot?" If you did drive a robot, I hope that you were also impressed by the professionalism, passion, and excitement that Minnesota high school students have for competitive robotics.

There are 190 FIRST (For Inspiration and Recognition of Science and Technology) Robotics/FRC teams in Minnesota that are part of a worldwide community made up of 8,410 teams from around the globe. Each January a new game with a new objective, new rules, and new robot regulations is introduced to high school students. Teams then have roughly six weeks to analyze the game, develop strategies, design, prototype, and build a competition-ready robot. Throughout March and early April, competitions are going on each week somewhere on the planet with the ultimate goal of earning an invitation to Houston, Texas, and competing in the FIRST Championship. The best teams in the world gather in late April – and Minnesota has a rich history of sending numerous teams from all corners of our state to compete on that global stage.

A typical robotics competition takes place on a "field" that is approximately the size of a volleyball court. The field has three driver stations at each end. Drive teams of three to four students stand in assigned locations. Behind protective end walls – similar to the boards on a hockey rink – students drive their robots remotely for two-minutes-and-fifteen-seconds matches. Competitions are three days long and more than 100 matches are played in alliances of three teams as they compete against opposing alliances. These alliances change with each match and strengths and weaknesses must be taken into account in pre-match strategy sessions. Active negotiating, identifying team capabilities, and creating a plan

In a field often dominated by males, Nevis High School Robotics Team 3102 has great participation from female students. Nevis Superintendent Dr. Gregg Parks says these girls are "breaking stereotypes and inspiring future generations of women in STEM." Photo courtesy of Nevis Public School

for the most effective game strategy are examples of students working together. This collaboration is what's right with public education.

As a proud mentor of FRC Team 3102 – the Tech-No-Tigers from Nevis – I have a great appreciation for the multitude of life skills my students gain through robotics. Being a CTE teacher for more than three decades and coaching more than 50 seasons of athletics and robotics, I continue to be inspired by my students as I watch them succeed and fail. Robotics is hard. Inventing is hard. Creating a brand-new machine is hard. Collaborating with students from other schools, states, and countries can be hard. In all aspects of robotics, my students must face challenges, work together, explain themselves and their ideas, meet and work with others, and continue when faced with failure. These are all things that are right with public education.

We work hard to build creative, unique, and effective machines in robotics, but our real product is creative, unique, and effective young adults. A robotics team is actually a company with dozens of departments and subgroups working together with other companies to combine effective solutions for a common goal. Our common goal is to build quality humans and our robots are just another tool in the box.

See Page 10: Nevis Superintendent Dr. Greg Parks discusses how the Nevis robotics program empowers students.

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Building more than robots – robotics empowers student leaders

Dr. Gregg Parks, Superintendent of Nevis Public School

I encouraged mentor Olaf Netteberg's robotics team to be a part of the School Excellence Showcase at the MSBA Leadership Conference starting three years ago. Robotics in the state is an incredible opportunity for our students to gain exposure to many of the principles of STEM. However, our robotics team coaches constantly emphasize the actual robot and competitions play a small role in the total robotics experience. Participation in the MSBA showcase allows our students to build on added skills beyond technology, engineering, and problem-solving. The experiences during the MSBA Leadership Conference provide students with invaluable experiences in public speaking, teamwork, and leadership while fostering their personal growth and confidence.

One of my favorite moments was watching one of our female students engage a large group. With absolutely no fear, she shared the story of her robotics team with a group of leaders in suits. To say I was proud would be an understatement. During the school year, this student is an extremely shy individual, who often chooses to remain quiet and by herself. However, on this day she had all the confidence of someone giving a TED Talk. In my mind, this is a far greater contribution from the robotics experience than the technical aspects which we all expect.

A legacy of mentorship: One of the hallmarks of Team 3102 is its unwavering commitment to mentorship. The team has garnered a strong reputation for supporting emerging teams. With open arms, they welcome newcomers, guiding them through First Robotics. Their belief in cooperation with the competition has set them apart as true leaders in the field. The Tech-No-Tigers have developed a tradition of hosting the kickoff robotics event. Teams from the area come to Nevis to begin the excitement for each season. The new game parameters are revealed allowing for an idea incubator to brainstorm potential design and competition strategies. The Tech-No-Tigers have also acquired a field to allow practice sessions before competition.

Inclusive leadership: Team 3102's success is not confined to competition. At the helm are leaders who actively seek out talent from every corner of our school's population. Spearheaded by mentors Olaf Netteberg, Kay Netteberg, Aubrey Capecchi, and Hannah De La Hunt, the Tech-No-Tigers have emerged as ambassadors for FIRST Robotics. They understand that innovation thrives on diversity and actively recruit students from all sectors. Throughout the years, Team 3102 has included members who have gone on to Ivey League schools and worked at NASA and the National Security Agency. They have also had individuals who have taken their acquired skills and went to trade schools or went directly into the workforce. Their commitment to inclusivity not only enriches the team but also fosters a culture of acceptance within our school.

Empowering females in STEM: In a field often dominated by males, Team 3102 has successfully shattered barriers and paved the way for female participation. It is not uncommon to find females comprising more than half of the team – breaking stereotypes and inspiring future generations of women in STEM.

Community support: Behind every successful team lies a dedicated support system, and Team 3102 is no exception. Through the tireless efforts of its leaders, the team has raised more than $40,000 annually to support travel expenses and competition fees. This unwavering community support speaks volumes about the impact and importance of robotics education in our school and beyond.

Dr. Gregg Parks is the Superintendent at Nevis Public School. Contact Gregg at gparks@nevis308.org.