Introduction

In January 2012, City Tech students took on the challenge of mentoring two local high school robotics teams to build two separate robots in six weeks for the annual FIRST Robotic Competition (FRC). City Tech students served as peer mentors and played crucial roles in leading the two high school rookie teams to build two robots.

Objectives

1. To expose high school students to the field of engineering technology.
2. To tie hands-on activities to the study of STEM.
3. To give students a new perspectives in dealing with real problems.
4. To provide an opportunity for students to learn from their mistakes.

Findings

1. Engaging hands-on activities have proven success in attracting young people to the field of engineering technology.
2. Students learn well in teams, project based activities, and collaborative environments.
3. Hands-on project-based activities also strengthen students’ skills in critical thinking, communication, collaboration, and creativity/innovation. These skills have been identified by top U.S. companies as priorities for employee development, talent management and succession planning.

Conclusion

It is prudent for educators to incorporate hands-on practical applications at every stage of a student’s education. This connection should be made earlier during a student’s high school years and be reinforced every semester during student’s college years so as to allow the student to reach a level of experience expected by companies for entry level or junior level positions.

Words from the High School Students:

- “Doing a hands-on robotics project helped me with my engineering skills.” – Vinod Team 4299
- “FRC is a creative gateway to mechanics and software engineering.” – Justin Team 4299
- “Along the challenging six week period of building, I’ve learned some of the stresses engineers and programmers face but despite these challenges it didn’t stop us from gaining new skills, experiences, and even new friends.” Bridget Team 4383
- “Robotics required teamwork, so as a team member, we all had to help each other.” - Shwe Team 4299
- “Robotics has given me the experience of building robots, programming them and fixing them to make things function properly.” – Spencer Team 4383
- “Honestly, words cannot describe how much I loved working with the guys at City Tech on the robot.” - Gloria Team 4299

Mechatronics Technology Center (MTC) welcomes more students to participate in various research activities at the Center.

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