

# **Recruitment of Engineering Students through Community Based Programs**

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## **ABSTRACT**

The paper describes the involvement of a Penn State Hazleton faculty in the development of STEM (Science, Technology, Engineering and Math) enrichment activities at the Hazleton One Community Center (HOCC). It also discusses the effectiveness of the program in terms of recruitment into engineering and STEM related careers. Penn State Hazleton has just completed its first year of a pilot outreach program. Engineering faculty has developed a community-based after-school program in collaboration with the Hazleton Integration Project (HIP) at the Hazleton One Community Center located in Northeastern Pennsylvania. This presentation details the focus and activities of this pilot program. The focus of this program is to provide mentoring and enrichment for students and community of the various nationalities living within the Penn State Hazleton service area. This presentation further details how the program improved STEM skills and how the students were motivated to enroll in engineering and STEM related programs.

## **INTRODUCTION**

Penn State Hazleton is located in Northeastern Pennsylvania which used to be a very prosperous anthracite coal mining region. After the closure of the

coal mines, the area still remains economically disadvantaged. The opportunities for young people are limited and this results in a higher crime rate. In recent years, the low housing cost attracted a large group of immigrants mostly from the Dominican Republic and Mexico. Approximately 40% of the students in local school districts are English as a Second Language (ESL) students. Very often with both parents working, those students need after-school care and activities. A local group of concerned citizens, educators, parents, politicians, business leaders, etc., managed to secure funding to create the Hazleton One Community Center and establish a program called the Hazleton Integration Project.

## **DESCRIPTION OF THE PROGRAM**

The goal of the Hazleton Integration Project at the Hazleton One Community Center is to provide enrichment activities for local students which include music, theater, art, sports, ESL, computer literacy, as well as, STEM. Only the Director of the Hazleton One Community Center is a paid employee. Everybody else are volunteers. Authors of this presentation offered an after-school course entitled, "Roadway to Careers in STEM". This was a one year pilot program which took place in the Fall and Spring semesters. The program

included exposure to engineering careers, introduction to engineering design and graphics plus a hands-on project which consisted of building a motorized bicycle. Student participants were getting exposure to engineering calculations, including statics, strength of materials, structural analysis, kinematics, as well as the concepts of work and power. The system international of units (SI) was also discussed. A problem of the week was posted for students as part of their weekly homework assignment. The importance of science, technology and math was emphasized and demonstrated using practical applications. A career guidance component was also part of the program. All programs at the Hazleton One Community Center are free of charge.

## **ASSESSMENT OF THE EFFECTIVENESS OF THE PROGRAM**

The program started in August 2013 with seventeen people enrolled in the program. By the beginning of the Spring semester, the enrollment was down to five highly dedicated participants. During the Spring semester, two of the five participants who were high school seniors applied for admission to Penn State Hazleton and were accepted. The other three participants are junior level students who have not made future plans yet.

## **CONCLUSION**

The Hazleton One Community Center outreach program recruited two additional students into the Penn State Hazleton engineering program. This may not be a big return on the investment of faculty time, two hours/week for two semesters. The program provided enrichment in STEM and much needed mentoring of young people who are very often lacking a role model. Authors of this presentation are planning to repeat this experience next year, in order to make the program more effective. The plan is to have undergraduate engineering students from Penn State Hazleton, as well as, undergraduate education students and students from other disciplines involved with

the Hazleton One Community Center. This will be done with the purpose of widening the scope of the outreach.

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