The University of Notre Dame Center for STEM Education believes that all young people, especially those from underserved communities, deserve a high-quality STEM education in order to shape their own futures. By conducting research and implementing programs, the Center improves STEM teaching and learning in both Catholic and public schools.

UNIVERSITY OF NOTRE DAME

Center *for* STEM Education

STEMEDUCATION@ND.EDU | (574) 631-1131

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SIEMENS FOUNDATION REPORT

University of Notre Dame CENTER FOR STEM EDUCATION

The University of Notre Dame Center for STEM Education engages young people through STEM education to prepare them be a force for good in the world. As part of our mission, the Center has established nearly a dozen annual Summer STEM Camps that provide high-quality, hands-on, and interesting learning experiences for students from low socio-economic backgrounds around the country.

Through the generosity of the Siemens Foundation, more than 200 students from the middle grades – the age when interest in STEM disciplines is most likely to decline – participated in camps focused on biology, chemistry, engineering, and robotics. Each day, students engaged in hands-on, real-world investigations that required ongoing conversations about data, providing evidence for their arguments, and solved problems collaboratively.

"I liked all the challenges and testing to see if it worked. I liked it because it helped me think what I can do better."

7th Grader
Modesto, CA

In 2018, 207 middle school students from 13 different locations across the country participated in the camps. Over half of the participating students came from under-represented populations in the STEM fields.

Many of the activities and challenges involved working as a team toward a common goal. After the camps, multiple students highlighted the relationships that they built over the two weeks, especially those made within the context of coding. One student explained that "creating our video game was a fun experience which taught me how to effectively communicate with teammates." Teachers also identified the coding curriculum as high-level, interesting, and relevant for their students. One teacher explained, "It is so enjoyable and awesome to see what these kids come up with by the end of two weeks. Teaching these kids the fundamentals of programming will help greatly later on, and it always helps me improve my own understanding of it, too."

Post-camp evaluations highlighted their positive impact on students' interest in STEM. Nearly 90 percent of students across all camps indicated an increased interest in STEM disciplines after participating in the camp (Figure 2). More importantly, no statistical difference existed by gender or race, suggesting that all students – including those often least likely to engage in STEM disciplines – increased their interest levels in these disciplines.

"Overall, the camp is well-structured, with engaging activities and quality learning experiences. I teach pretty much the same gas laws unit to my high school students, so it is high-level learning. The students enjoy the camp, which makes it fun to teach."

Chemistry Teacher
Indianapolis, IN

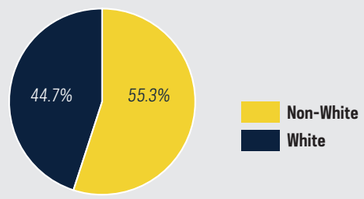
The camps' impact on student identity was also largely positive, as evidenced by the reflective feedback students offered on surveys after the camps. Although identity is a difficult construct to change in a short amount of time, a majority of participants across computer science, engineering, and science stated that they identified more with these disciplines after their camp experience.

Geographic **Distribution**

Tucson, **AZ**
Modesto, **CA**
Stockton, **CA**
Tampa, **FL**
Indianapolis, **IN**
Mishawaka, **IN**
New Orleans, **LA**
Grand Rapids, **MI**
Morristown, **NJ**
New York, **NY**
Las Vegas, **NV**
Pittsburgh, **PA**

Student **Demograpics**

Figure 1



Compared to the first day of camp, **I am more interested in...**

Figure 2