

Overview

The Materials and Manufacturing Summer Teachers Institute is a school-to-career initiative that targets STEM skills instruction in the New Haven and Bridgeport Public Schools grades 7-12. The project is sponsored by the New Haven Manufacturers Association (NHMA) and the Center for Research on Interface Structures Phenomena (CRISP), a National Science Foundation-funded Materials Research Science and Engineering Center at Southern Connecticut State University (SCSU) and Yale University. Through the professional development of their science teachers attending the institute, students will experience in their classrooms and school laboratories how the STEM skills of science, technology, engineering, and mathematics are integrated in the manufacturing industry to create products out of materials. This introduction will provide insights that increase academic achievement in science and mathematics and prepare students for internships and hands-on school-to-career opportunities in high school. An objective of the project is that early preparation will also provide students with a foundation of knowledge and expertise that will lead to college and careers grounded in the STEM skills as they relate to manufacturing and industry. This year marks the 5th anniversary of the Materials and Manufacturers Summer Teachers' Institute.

Project Design

The professional development of their teachers is the project's strategy for engaging 7th – 12th grade students in the practical uses of STEM skills in manufacturing and materials science. The proposed program's mission is as follows:

“To provide science teachers and coordinators with an introduction to industrial product design as it applies to requisite STEM skills. The application of STEM skills to real world challenges and the creation of useful products will be explored in order to create a basic understanding of the integration and transferability of STEM skills” (Project Steering Committee, January 2013).

This year, the first day, through lunch was held at SCSU and the afternoon was held at Leed Himmel, where teachers toured the manufacturing plant and heard from hiring professionals. The second and third days were held at Platt Technical High School in Milford. On these two days, the teachers not only learned about the manufacturing process and materials, but will also made their own sterling engine.

This year, there is an optional half day (a fourth day) which took place at Assa Abloy. Again, here teachers toured the facilities and spoke to the industry professionals.

A total of twenty-seven STEM teachers, including teachers each from the New Haven and Bridgeport Public Schools, participated in the institute. Science faculty attending learned from industry operations and technical professionals about the following:

- 1) Their firms and what they produce
- 2) STEM skill sets that are required
- 3) The raw materials used, how the product is made and what it is required to perform
- 4) Why certain materials are utilized and the critical properties of those materials
- 5) What goes into creating a product
- 6) Obstacles and limitations associated with creating a product