



Stevens Helps NJ Middle Schools Integrate Art and Engineering Lessons

Engineering and art are connected – directly in some fields, like architecture and industrial design, and indirectly in others. In partnership with the Geraldine R. Dodge Foundation, the Center for Innovation in Engineering and Science Education (CIESE) at Stevens – which is dedicated to exposing K-12 students to innovation and engineering – brought that connection to life in New Jersey classrooms this year through its Integrating Art into STEM through Engineering Design program (STEAM).

STEAM grew from Stevens' illustrious history of merging engineering and artistry. Alum Alexander Calder ('19) invented the mobile and is widely considered one of the most influential sculptors in modern art, for example. One of his mobiles hangs in the S.C. Williams Library at Stevens.

The STEAM program looks to infuse art into the STEM curricula so middle school teachers are capable of teaching integrated art and engineering lessons. In a series of workshops, middle school art and science teachers from Jersey City, Newark, West Windsor, Demarest, Kenilworth and New Brunswick came together to explore connections and develop lessons that blend engineering design and artistry to engage students in creative and innovative pursuits.

"Kids need to realize that the arts are not something separate – they are a part of literacy, history, and especially science," said Christine Padilla, a science teacher at P.S. 23 in Jersey City.

"We're striving to achieve balance in learning so students understand that art and science are equally important and intimately related," said Curtis Cerillo, a science teacher from David Brearley Middle & High School in Kenilworth who enrolled in STEAM with art teacher Stephanie Petrakos.

STEAM began with one science and one art teacher from each participating school attending in a two-day professional workshop at Stevens on Aug. 11-12. They were exposed to a variety of engineering lessons and

classroom resources that foster artistic design and 21st century skills like creativity, problem-solving and teamwork. For example, they viewed Calder's kinetic art on display on campus and engaged in a variety of hands-on activities including building mobiles and other mechanical sculptures that they could turn into lesson for their own students. They also gained access to educational materials and equipment, as well as a project website where they could share the STEAM lessons they developed for their own classrooms.

Then, the teachers were back on campus today for the first of two follow-up workshops in which they described their experiences and best practices in implementing STEAM activities in their classrooms and received additional support from the CIESE staff. They also worked on a hands-on lesson that they can bring back to their own classrooms – building fully-powered “solar tree sculptures” which use 21st century solar technologies and electrical and alternative energy principles to bring motion and light to artwork.

The teachers said their students were excited by their early forays into integrated science and art curricula.

“I was taken aback by their enthusiasm,” said Carolyn Berry-Snogans, an art teacher at P.S. 23 who – with Padilla – engaged her students in a mechanical sculpture project. “They really comprehended the process and the outcome.”

The P.S. 23 teachers also took their students to the Newark Museum where they saw an exhibit of Calder's work.

“That just brought everything to life and made it personal,” said Berry-Snogans. “They loved making the connection to a famous artist from their home state and realizing that they could create what he created.”

Padilla and Berry-Snogans already have plans to continue integrating art and STEAM in upcoming lessons. They have even discussed creating a STEAM club in extended day so students can work on projects after the school day ends.

Petrakos and Cerillo said the students, teachers and administrators at David Brearley have also all embraced the STEAM philosophy.

“There is a concerted effort to adopt STEAM ideas throughout the school's curriculum,” said Petrakos. “It really grew quickly.”