



CHILDREN'S MUSEUM OF SCIENCE + TECHNOLOGY

Hello my name is elham
I would like to thank you
for coming evry week to
the Ymca and I want
to say that thank you
for the fun PROJECTS



by Elham osman

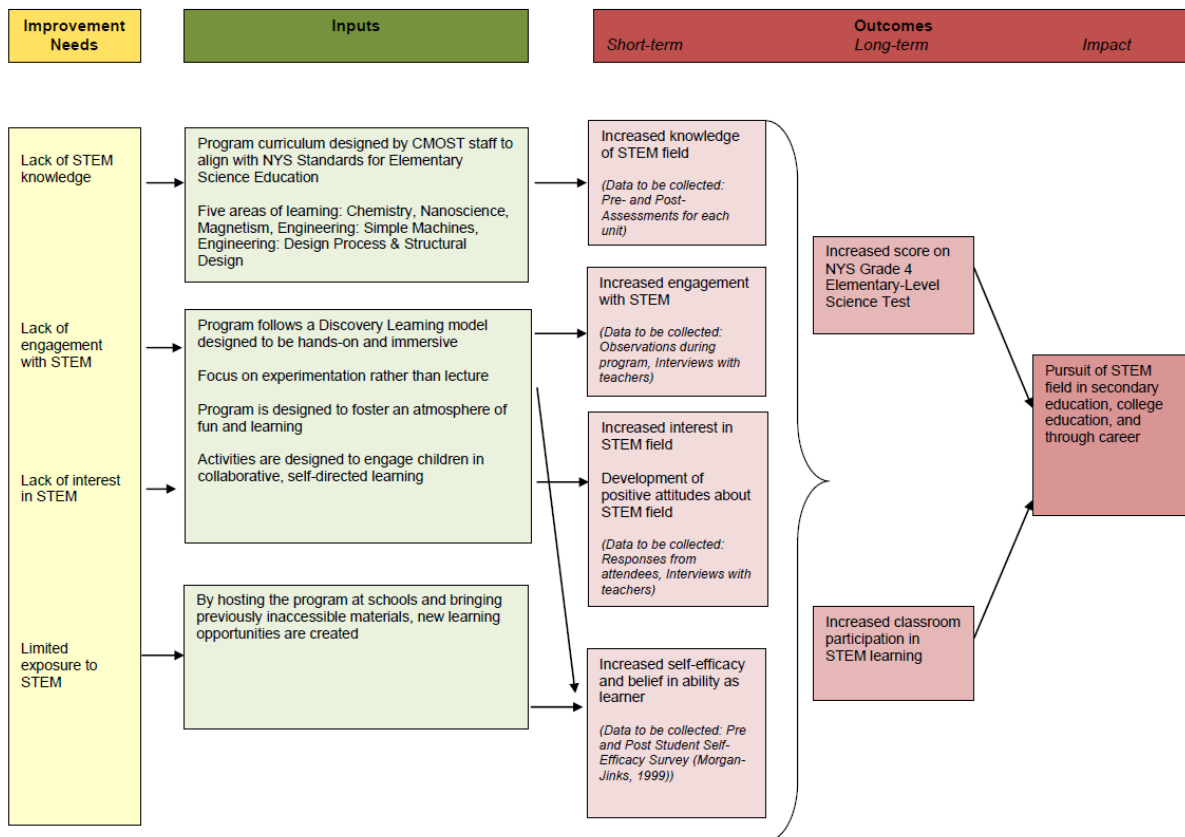
The Capital District YMCA is grateful to our partner, **National Grid**, for their generous support. Because of National Grid’s unwavering commitment to helping Capital Region children, we have been able to offer Science Crew to the **hundreds of at-risk students** who have benefited from this evidence-base program.

Children’s Museum of Science and Technology Science Crew Program:

Science **Crew** is a multi-week STE(a)M based after school program. Students in grades 2-5 are introduced to a variety of science, technology, engineering and math concepts in this hour-long, weekly program. Science Crew provides an opportunity for children to be immersed in a hands-on inquiry based learning over the course of the academic school year.

Science Crew is an evidence based program that measures students STE(a)M knowledge growth, engagement and interest in STE(a)M content, and students’ self-efficacy and belief in their ability to be a learner. The evidence collection is outlined below in the program logic model.

CMOST Science Crew Afterschool Program Logic Model



The Pilot Program:

The CMOST Science Crew after-school program development and pilot programming was generously funded by GE. CMOST developed four main STEM content units that consisted of five on hour sessions each. The programs were piloted at five sites including four afterschool sites and a library program. It is worth noting that these were not formal afterschool programs falling under the umbrella of another organization but rather coordinated by the schools on a temporary basis for this program. Each site had a total of 25 participants and the students that participated were from Saratoga and Schenectady Counties. The programming was developed and administered for children in grades 2-5 and was delivered over 20 weeks.

At the five pilot sites we employed a robust evaluation system that tested the following factors: increase knowledge in STEM field content, increased engagement with STEM content, increased interest in STEM fields and lastly increased self-efficacy. Our evaluation of STEM content found that the student's specific STEM content knowledge increased at each of the five program sites on average by over 40%. Overall scores show this level of improvement from pre- to post-test for all four content units.

In order to measure shifts in engagement with STEM activities and content we collected observations and surveys from teachers. Through this we found that over the course of the program student's engagement with STEM activities and content increased as the students developed comfort levels with the required scientific processes and skills and the types of activities that they were participating in. Additionally, student's attitudes towards science were measured with a modified "Attitudes toward Science" inventory. We noted an increase in student's value of science; desire to do science and their overall attitudes toward science by over 5% on average in just 20 hours of contact.

Lastly CMOST measured student's self-efficacy. Self-efficacy measures "one's belief in one's ability to succeed in specific situations. One's sense of self-efficacy can play a major role in how one approaches goals, tasks and challenges." The full Morgan and Jinks Perceived Academic Self-Efficacy Inventory is comprised of four subscales: talent, effort, task difficulty and context. However, a 30 item, abbreviated version was used for the CMOST Science Crew which included only the talent, effort and context subscales. This measurement tool found that the afterschool science program appears to have had a significantly positive impact on students' self-efficacy at the sites. The overall average scores for each of the three subscales show a positive change. The largest gain was within the talent subscale, which indicates that after the program, students believed they are more talented than they were before participating in the program.

Science Crew 2016-2017

I learn things here I don't learn in school & I wish you could stay because you're the best! Keep doing your job! Awesome cool (anonymous student June 2017)

During the schoolyear we served over 200 children for 20 weeks at the following sites:

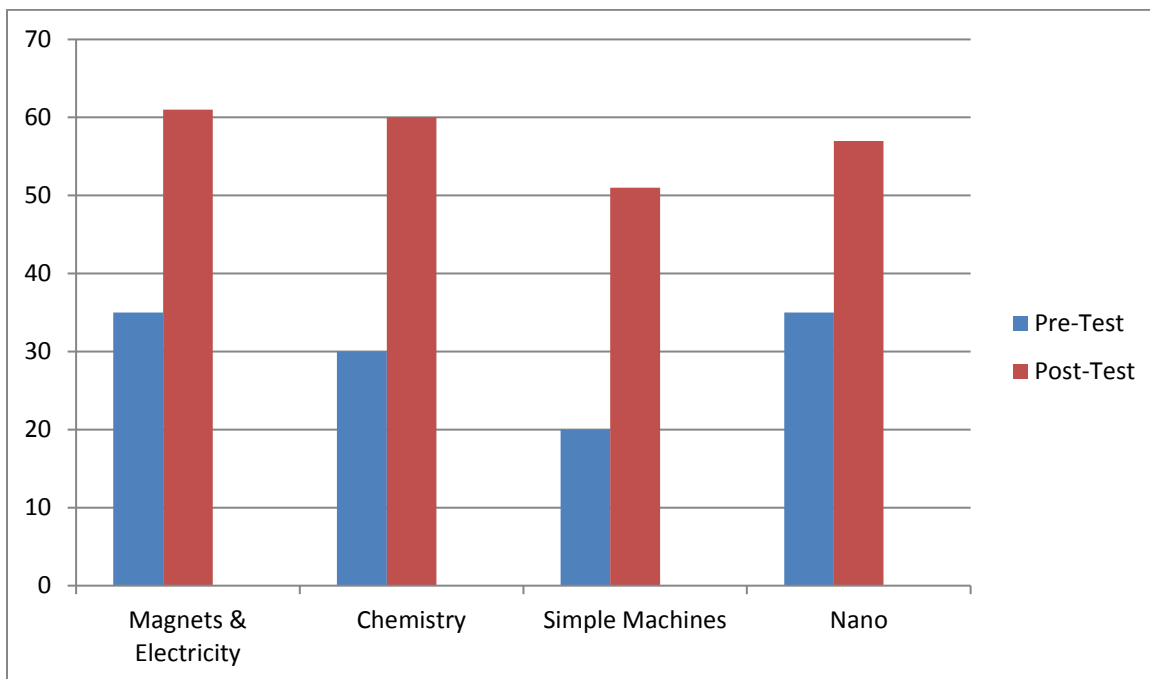
Chango	Westmere
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TOAST	Pleasant Valley
Pine Hills	Gardner Dickinson
Carroll Hill	School 14
School 18	Galway
Woodlawn	Paige

Our educators taught 20 weeks of science crew. Students were given the opportunity to delve into the following STE(a)M Topics:

- Magnetism & Electricity
- Simple Machines
- Countertop Chemistry
- Nano
- Engineering

These Science Crews have previously been tested for their efficacy of content delivery. CMOST creates each science crew with grant funding and uses those funds to develop curriculum, purchase materials and to test for both growth in scientific knowledge and social emotional growth of the children in the program. Each science crew unit is then assessed every two or three years contingent on funding to ensure that the goals of the program are being achieved.



This school year 2017-2018 CMOST is testing science crew units on both Ecology and Engineering. We would be happy to share the results of our testing with you when we have our results. Thank you for your support of this innovative educational program.