

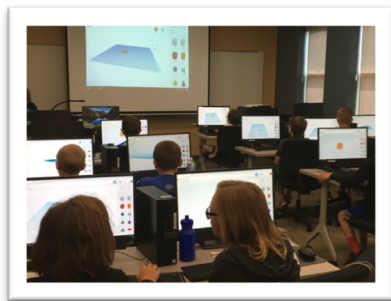
## Eaton Young Manufacturers Academy, July 2019

This year's Summer Eaton Young Manufacturers Academy was inspired by the vision of Eaton and the Eaton Charitable Organization: To improve the quality of life and the environment, and to support our local community. Often when students are interested in science or math and are also interested in helping people, they tend to turn to medicine. We wanted to show students how manufacturing helps people and how area manufacturers are focused on supporting and improving our local community.



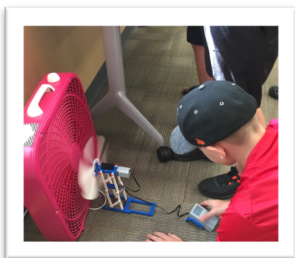
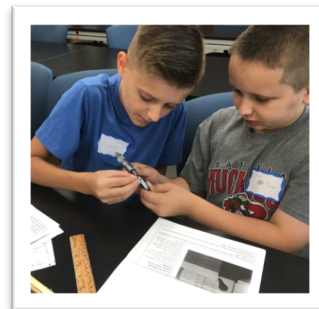
Students started the week with expressing pride for being a daughter, son, niece, nephew, or grandchild of an Eaton employee! We then had a visit from Cari Majteka, director of Literacy of Love. Cari spoke to the children about decision-making and how we can choose to help people on a daily basis. The students were inspired by Cari's talk and were excited to start their project for the week: Designing and building toothbrush holders for 150 students at the Bethlehem Orphanage in Uganda.

We then visited CA-BOCES and learned of the e-Nable program, an international organization that makes 3D prosthetic limbs for people around the world – and for people right here at home! Student Nolan Hurlburt gave a great presentation about his experiences building the 3D prosthetic limbs. The students also had a great experience working on the CNC machines, manual mills, and lathes. Our DIDI Summer interns helped with the machines, which gave them some experience and insight into possible future careers in manufacturing. Thank you to Hinsdale Central School for providing our bus!



Students mastered TinkerCad during the week, while designing their toothbrush holders, and worked with DIDI interns to print their creations on our MakerBot printers. A few students were so interested in 3D printing that they each took a printer home for the rest of the summer and are now helping teachers in their schools with 3D printing!

Measurement was a focus during the week, which led to the creation of checker boards. Students designed and created their own mini checkers using TinkerCad and the 3D printers. Using measurement and scale, students created two sizes of checker boards – a small set for themselves and a larger set, created in groups. Students put a lot of care and effort into creating the larger sets, knowing that they were being donated to the local Senior Citizen Center.



Generating power was another focus for the week. Students started with a good old hand-crank generator and moved on to a giant human circuit, involving all of the students – and some interesting reactions!! Power was generated and measured using LEGO windmill kits, thanks to Cuba-Rushford School.

Students also created BristleBots, small robots made by combining the end of a toothbrush with a vibrating motor and battery. During the lesson, students learned about design, problem solving, motors, circuits, and principles of balance. The race at the end made it all worthwhile!



Dr. Chris Hill from St. Bonaventure University Department of Mathematics, came to YMA to work with the students on ZomeTools, a mathematically precise construction set for building geometric structures. Students created their own creative, unique shapes then worked collaboratively to create a *rhombic enneacontahedron* – I think! Students appreciated the experience, learned about geometry, and enjoyed sharing their creations with their peers.

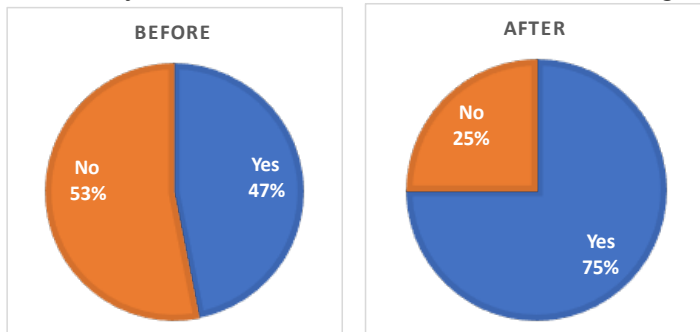
Another field trip was a visit to Boundless Connections. Students were able to use the many different computers, 3D printers, and state of the art technology to solve a few problems and 3D print some unique and fun designs. Some students decided to join the Boundless Connections camp for the following week, becoming members of the inspiring and progressing Tech Unleashed club.



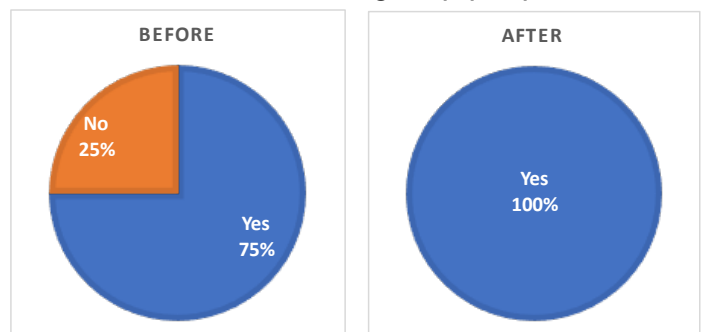
At the end of the week, parents were invited to listen to students' presentations, observe their children's creations, and meet their new-found friends. During the week, a common discovery by many of the students was the value of teamwork in manufacturing. Students appreciated the opinions of their peers, the importance of listening, and the friendships they developed. Everyone is looking forward to our next Eaton YMA!



## Would you consider a career in manufacturing?



## Does manufacturing help people?



**At the end of the week, students we asked the following questions:**

### **How does manufacturing help people?**

It helps people do hard manual labor easier. It creates stuff for people and makes people happy.  
Manufacturing helps people with special needs by helping them have a better life, such as 3D printed limbs.  
They make and design things to make disabled people able to do things. It makes life easier.  
People can make or invent things to help people. They can support needed areas in the world.  
It creates things to help people live easier. It gives them prosthetics cheaper, buildings, bridges land/water/sky, vehicles.  
Manufacturing solves problems. It can make electricity for people who need it.  
Manufacturing helps people by making things that are too expensive affordable for some.  
People can't live in houses that are not made properly and thanks to manufacturing we don't have to deal with that problem.  
Manufacturing helps people because if there is a steep hill you have to go over every day you can use manufacturing to get over it faster and easier.

### **What was your favorite part of the week?**

I really liked them all, especially the 3D printing. I liked creating a logo.  
The activities I liked the most were 3D printing and Zome Tools. Also the checkerboards.  
Zoom tools. Checker Boards. The snap circuit. 3D printing. Well, everything!  
When we made the checkerboard and also when we got to 3D print some stuff. The field trips are cool too.  
The activity that I enjoyed was going to Boundless Connections.

### **Thank you to...**

Thank you teachers and also companies for letting us do activities.  
Thank you Boundless Connections, you taught me how to 3D print in different ways.  
To Chrissy, Thank you for helping me! From Emma.  
Thank you to Mrs. Hewitt for helping me with the tool that measures thickness.  
Thanks Ms. Albert for teaching us how to use thinker cad.  
Thank you to all the interns for helping us and dealing with most of the kids.  
Ryan helped me build up energy using a hand crank and 3 windmills and to only build up 59 Joules.  
Thanks to the teachers for making this week lots of fun.  
Thank you so much to everyone for helping me with crafts and much more stuff. I enjoyed everything and would come back again.