

STEM 2035

Dream It. Do It. Manufacturing Clubs

Cattaraugus County, NY

2019



RALPH C. WILSON, JR.
FOUNDATION



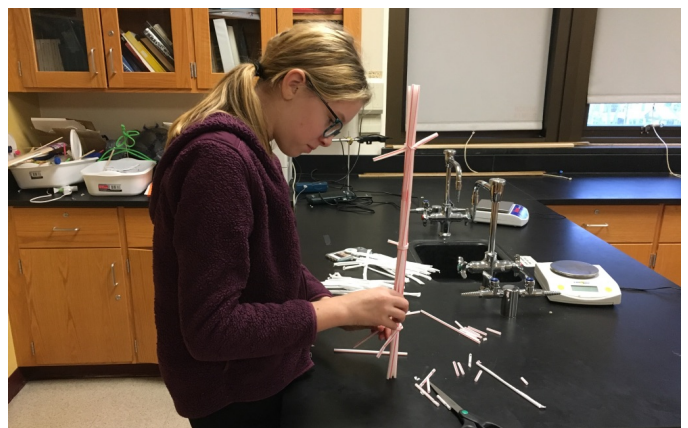
- * In January 2019, two new STEM 2035 Mfg Clubs clubs were formed.
- * Club focus was on the Soapbox Derby and the connections to manufacturing.
- * Throughout the year, club members also participated in the Eaton YMA, Girls in Mfg Day Mfg & STEM Fair, Summer Eaton YMA, National Mfg Day, and the DIDI 500.
- * During Fall 2019, Girls in Mfg Clubs invited boys, transitioning into STEM 2035 Mfg Clubs.
- * January 2020 will include the addition of one more club - Allegany-Limestone.
- * Included in this report is an overview of the club activities during the Fall semester of 2019.
- * Thank you to the Ralph Wilson Foundation: STEM 2035



Olean High School Mfg Club



OHS Mfg Club started the schoolyear with some ice breakers and engineering challenges (Paper Tower and House of Cards) to foster team work and enthusiasm about the club. There were then a few weeks of exploration on the 3D printers (led by the 3D Ambassador Byron Ring), Makey-Makey and Thimble kits (circuitry and coding), EV3 Mindstorm and Snap Circuits. The next few weeks were spent preparing for the DIDI 500, a rubber band powered car race at St. Bonaventure University. Students explored the physics and design concepts involved in the DIDI 500. Kris Ring, Club Champion and teacher of Physics and Calculus, felt that the biggest takeaway from the fall semester was the students embracing teamwork and the utilization of everyone's unique gifts and perspectives. "Every week the students seem more willing to take risks and throw out their ideas to the group and try something even if it doesn't work. They are definitely excited to learn from and build off of the failures they have had in our challenges and with the rubber band cars. It's fun to watch."



Portville Mfg Club



Much of the fall semester was spent prepping the Soapbox Derby cars and taking them to Jamestown. After that, the Portville Club turned to the DIDI 500 and learned how to make a fast/effective car. They discussed the science behind what could be done to have an edge over the competition. Over 200 students participated in the DIDI 500 this year. Three teams from the Mfg Club and other teams from 7th and 8th grade participated, with Portville taking three of the six prizes! The club also went on a field trip to Cutco. In the Spring, the club will be getting into coding and wiring followed by the mini Soapbox race and finally the Soapbox Derby in June.



Portville Girls in Mfg Club



The main focus for the fall semester was building confidence in using the machinery at the Envisioneering Center as well as understanding the concepts and settings behind executing the jobs with the machines. Students learned how to create and save files to a Tinkercad account for 3D and how to save to cloud (versus thumb drives which they would often lose!). Students also learned laser engraving on different materials and how to use the sticker maker (vinyl cutter). This was helpful for their Super Stock car in the Soapbox Derby. Students also worked on the Girls in Mfg Soapbox car as a team and participated in the October Challenge in Jamestown. Club members made a lot of items for the targeted silent auction to fundraise for SPCA – but the students loved their creations so much that they took them home to give to their family as Christmas gifts. The club will continue with this project in the spring. The year ended with a field trip to a local company, Rusty Rooster. Chris Otto, Club Champion, felt that “there was a significant rise in confidence throughout the semester, empowering the students to come into the Envisioneering Center on their own. Students also showed more confidence in design, equipment operation, and computer knowledge.”





Cuba-Rushford GLEAM



Cuba-Rushford's Girls in Mfg Club is called GLEAM (Girls Learning Engineering and Manufacturing). This past semester was both busy and productive. The year began with designing and building Dash robot arms as well as a bubble wand for the robot. They then worked on a business plan for their upcoming project: Designing, creating, and selling Christmas Tree Ornaments and selling them for a charity. They decided that St. Jude's Children's Hospital would be the charity of choice. Students used both Thingiverse and TinkerCad to design and 3D print their Christmas tree ornaments. Students came in during lunch, after school, and early in the morning to make sure the ornaments were in production, to check if the filament needed to be changed, or see if a new design needed to be downloaded. Students took a break from the ornaments to work on their rubber band cars and prepare for the DIDI 500. The GLEAM club entered 4 teams into the DIDI 500 and one of the teams, Smarties, won first place in the race! Following the DIDI 500, the GLEAM club set up a table at First Baptist Church in Cuba, NY where they sold \$550 worth of their 3D printed ornaments and donated the money to St. Jude's. Well done!



By Shannon Albert, Science Teacher

For the second year in a row, a CRCS GLEAM team brought home the gold in the *Dream It. Do It. 500* at St. Bonaventure University. Girls STEAM Club team members were sixth graders Dylan Kirman, Aaliyah Kowalewski, Jady Little, and Charlize Spoor. This engineering event for grades 5-12 is sponsored by *Dream It. Do It.*, SBU and local manufacturers. CRCS entered four

middle school teams in the competition this year. The teams were challenged to design and construct a functioning rubber band powered car that would travel as far and as straight as possible while carrying weight. Some of the area's top engineers worked with our teams to help students apply the engineering design process. Organizers hope the skills practiced at the event will help translate into future success!



OIMS Mfg Club



Students of the Olean Intermediate Middle School Mfg Club designed and created holiday ornaments using the TinkerCad programming and 3D printers. The ornaments were prototypes and each student made a manufacturing plan to sell the ornament at school events- price analysis and supply/demand comparison along with marketing announcements were a few of the components of this project. Another group of students worked on displays and plans to sell the husky gear created last year. The merchandise will be sold in the school store and profits will be donated to the local shelter. Students set prices and monitored the products sold.

Club members formed teams and designed rubber band cars using recyclable materials. These teams joined the DIDI 500 competition at St. Bonaventure University in November. They worked alongside students from all over the southern tier, many of whom were in high school. While they did not place, they had a wonderful time and overcame challenges to learn new life lessons.

OIMS Mfg Club also worked with the Dash and Cue robots to practice programming. One of the ways they are developing their programming skills is participation in a nationwide competition from the Wonder Workshop Company. The competition has several missions where the robot has to be programmed to complete. Students upload their mission programs, video clips, and photos to the competition site and winners will be revealed at the end of January.

Another group developed recycling plans for scrap plastic springy wraps from a local manufacturing company, Total Piping Solutions. Students are on the front line of research and development of a new use for an old product. New ideas are developed, tested and revamped. This is still a work in progress.

A small group of the students have become leaders in the 3D printer field and they are working with the 5th grade class to make name plates that will be velcroed to each student's desk. They work with the younger students to help them meet dimensional requirements and merge text design and artistic design.

On Saturday, November 23, 2019, almost 200 students participated in the 2019 DIDI 500. Participants were from Allegany-Limestone, Olean, Hinsdale, Portville, Cuba-Rushford, Bolivar-Richburg, Gowanda, Bradford, Brocton, North Collins, Pioneer, Randolph, Springville, Archbishop Walsh, Girls Scouts, and Homeschool.

One quarter of this year's participants were members of the Dream It. Do It. Manufacturing Clubs, sponsored by the ARC (Appalachian Regional Commission) and the Ralph Wilson Foundation:STEM 2035.

Students were asked the following questions at this year's DIDI 500:

Would you consider a career in manufacturing?

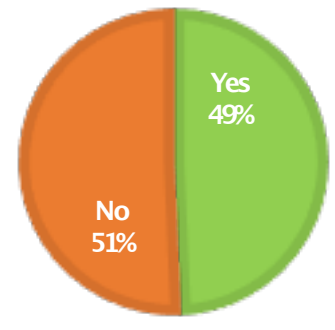
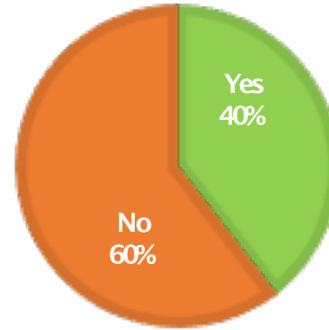
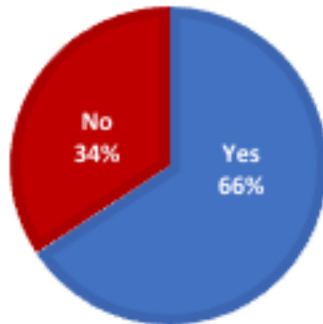
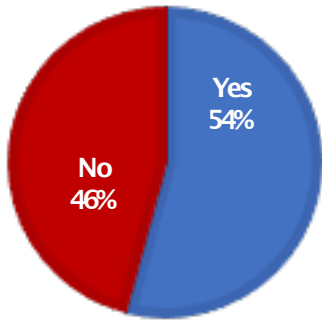
Would you consider a career in business?

Before the DIDI 500

After the DIDI 500

Before the DIDI 500

After the DIDI 500



On a scale of 1 (very little) to 5 (quite a lot), how much do you know about...

Manufacturing

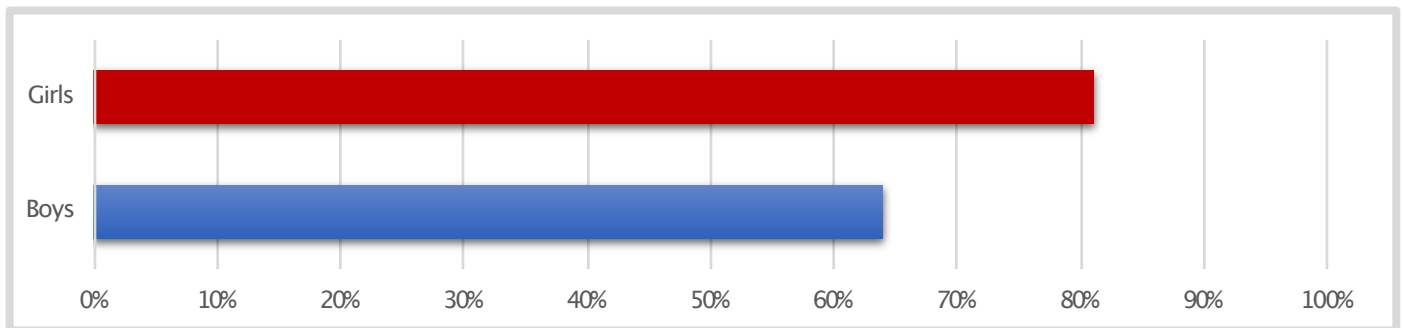
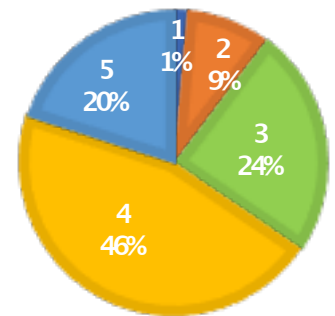
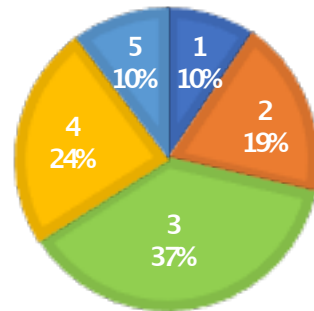
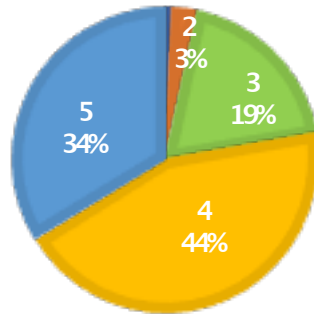
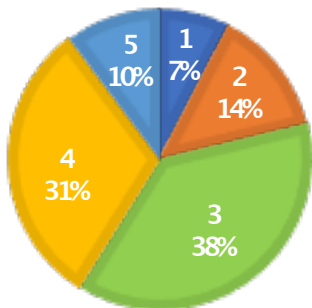
Business

Before the DIDI 500

After the DIDI 500

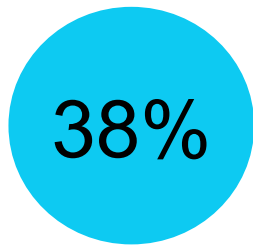
Before the DIDI 500

After the DIDI 500

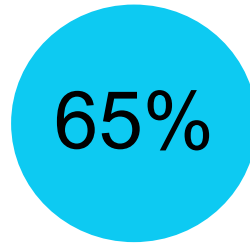


Thank you to this year's sponsors: Cutco Corporation, KA-BAR Knives, INC., Dixie Auto Service, Olean Class Cars, Conkey's Automotive & Vinyl Signs, Manufacturers Association of the Southern Tier, St. Bonaventure University, and Dream It. Do It. WNY

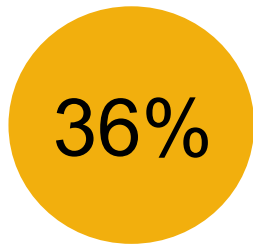
The Portville Mfg Club joined a group of seventh graders from Portville Central School to visit Cutco Corporation for a facility tour and a series of inspiring presentations by members of the Cutco team - including the Girls in Mfg Club Champion, Christine Otto. Christine gave an inspiring talk about her journey from high school to her present position in Information Technology at Cutco.



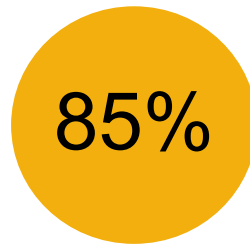
of the students considered a career in manufacturing **before** the tour.



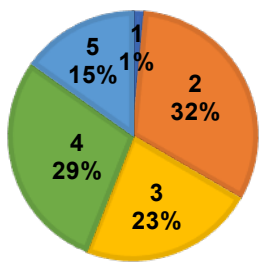
of the students considered a career in manufacturing **after** the tour.



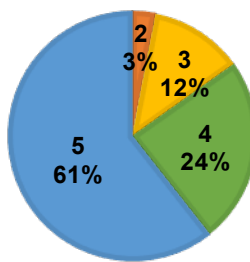
of the students considered manufacturing to be exciting and safe **before** the tour.



of the students considered manufacturing to be exciting and safe **after** the tour.



Students were asked **before** the tour... On a scale of 1 (not much) to 5 (a lot), how important is manufacturing to the local economy?



Students were asked **after** the tour... On a scale of 1 (not much) to 5 (a lot), how important is manufacturing to the local economy?

Below are a few comments and thank you notes from the students of Portville Central School:

- * I liked seeing all the robots and people running them.
- * I thought the tour was great and my family buys a lot of your products so thank you for the tour.
- * Thank you for taking the time out of your day to let us come in and see how knives are made, I really enjoyed it and thought it was fascinating.
- * I highly enjoyed this trip and I would like to say thank to the Cutco crew for having the school. I wish I could come again. It was very fun and I really enjoyed it.
- * I always knew Cutco made knives but didn't know they were that important to Olean.
- * Thanks you so much for letting Portville central school have a tour of Cutco this year. I had so much fun and I didn't know that everything was so cool there and I told my friend I wanted to work there when I was older maybe.
- * Thank you for letting us come to Cutco. Our tour guide was amazing. I thought that the machinery was very cool.
- * Thank you it was an exhilarating experience. I never thought it was this exciting or fun to make knives.
- * It was very well organized and I liked that each process had a section like for the handles and a kind of home base for the maintenance people. I liked how well each host described how each machine works.
- * It was a really fun experience. I would go back. It was a very good learning experience
- * People told us to get a college degree so I could have a good job so that's what I'll do. It was very fun.
- * The tour guide I had was a nice man he explained quite a bit with the manufacturing aspect.
- * Thank you for showing our class how your knives are manufactured, and what jobs it takes to manufacture them.

Our Dream It. Do It. STEM 2035 Manufacturing Clubs have been involved in other Dream It. Do It. events including the following:

2019

Eaton
Young
Mfg
Academy



Girls in
Mfg Day



Mfg &
STEM
Fair



Mfg
Tours



Cutco
Celebrating
Women in
Mfg



Soapbox
Derby



National
Mfg Day



Eaton
Summer
Young
Mfg
Academy



DIDI500



Any questions about the upcoming Dream It. Do It. events and programs, please contact Evelyn Sabina, Program Coordinator, esabina1@gmail.com