



Austintown Local Schools **STEM Newsletter**



December 2016

Happy Holidays

Calendar

Dec. 23 - Jan. 1- Holiday Break

Jan. 2- Back to School

Jan. 11- 2hr. Early Dismissal

Jan. 13- End of 2nd nine weeks

Jan. 20- No School for students



10th and 11th grade STEM students and STEM College Dean, Dr. Steelant cheer on YSU while visiting campus. Go 'Guins!

Season's Greetings STEM Families,

December was a month to remember. Students created their own holiday decorations using advanced manufacturing techniques, witnessed higher education at YSU, and taught eager students at AIS.



Josh, Sam, and Ms. Smith cozied up by the holiday tree in their pajamas in celebration of the 2nd Annual Christmas Spirit Week. Ho Ho Ho!



5th graders at AIS used line follower sensors while learning computer programming during the STEM Ambassadors Program.



Robert examined a 3D printed skull while visiting the Advanced Manufacturing lab at YSU.



In celebration of the 2nd Annual Christmas Spirit Week, students posed in front of the tree decorated with 3D printed ornaments designed by the students. Doesn't get much cooler than that!



Students and parents can access all assignments and projects via Google Classroom and PLTW.org.



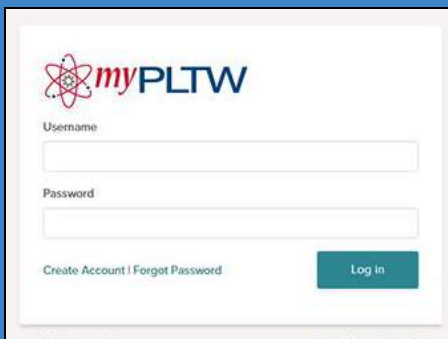
3D-printed ornaments created by the students.



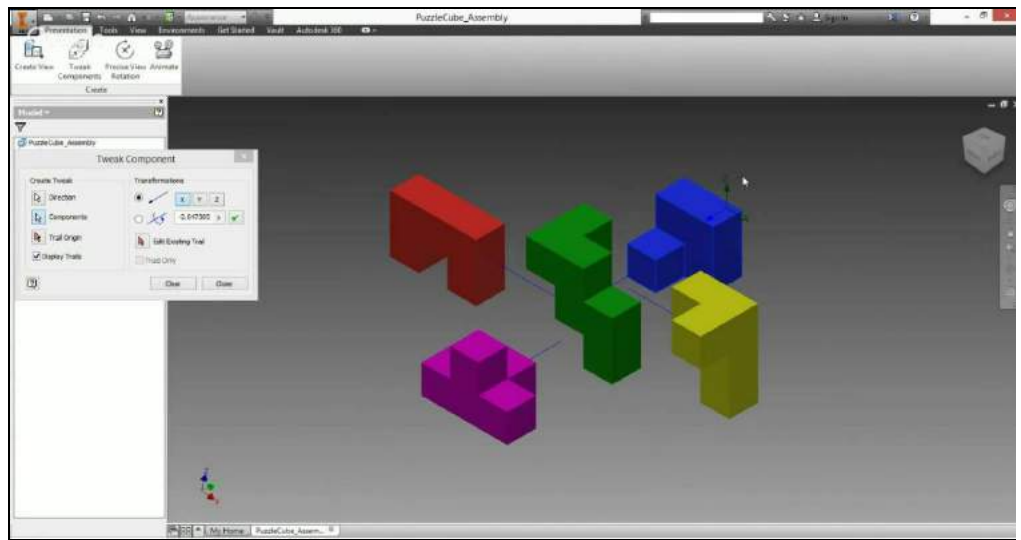
STEM College Dean, Dr. Steelant and J'Nayah perform an experiment on the campus of YSU.

Introduction to Engineering

- ★ Students concluded their puzzle cube project by analyzing the performance of their design and judged their solution as viable or nonviable with respect to meeting the design requirements. They created working drawings for reproducibility and created a package design complete to be for sale on the market. This project will be showcased in their portfolio.
- ★ Students designed, created, and 3D printed a holiday ornament to put on the 1st Annual STEM holiday tree.
- ★ Students visited AIS and taught the 5th graders about isometric drawings, elements of 3D design, and simple circuitry.



Students login to <https://my.pltw.org/> to access the curriculum and most assignments. Check it out!



Students created automated assemblies in Autodesk of their individual part files of their puzzle cube pieces.



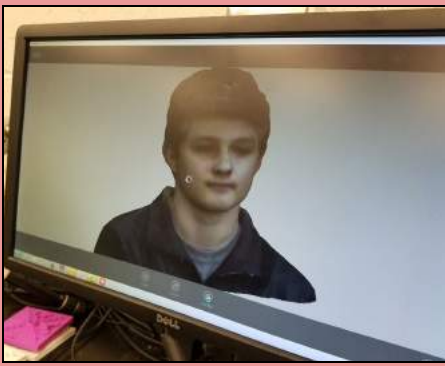
Joe redesigns and troubleshoots his robot using line follows and advance programming as part of the Computer Integrated Manufacturing course.



Nathan and Sam troubleshoot the automation of Nathan's assembly of his puzzle cube. Click on the link to see an [Automated Assembly Video](#).



Walter created a toy top, or using Autodesk Inventor as part of the Computer Integrated Manufacturing course.



In the Advanced Manufacturing lab at YSU, Vlad was scanned using a 3D imager and recreated using 3D manufacturing techniques. He is ready for production!



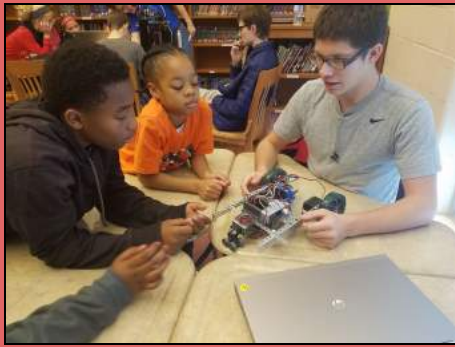
Caleb guides Emily through an alternative method of creating one of her puzzle cube parts.

Principles of Engineering

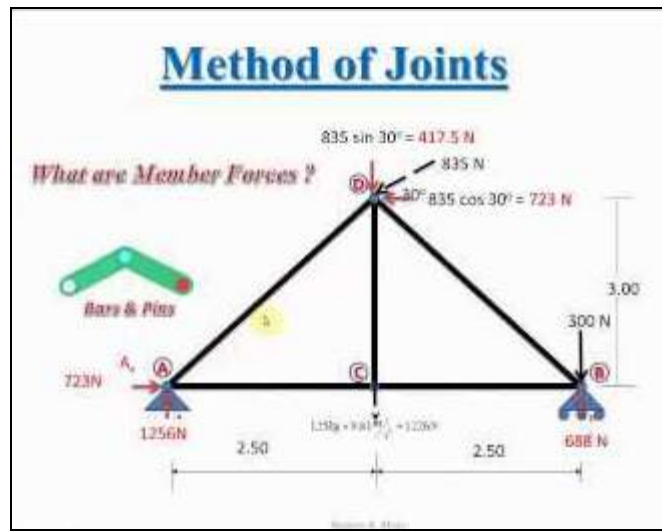
- ★ In the Materials and Statics unit, students learned about structural design and symmetry by focusing on centroids and their importance to overall structural stability. They calculated the centroid of various irregular objects using trigonometry and advanced mathematical concepts.
- ★ Students created free body diagram and calculated force vectors to create their own truss designs. In the future, they will model their trusses using 3D manufacturing techniques learned previously.
- ★ Students designed, created, and 3D printed a holiday ornament to put on the 1st Annual STEM holiday tree. They visited AIS and taught the 5th graders computer programming using Code.org, 3D design and printing, and how to use motors and sensors.



Jared, Chad and Hannah played with puppies as part of the K9 for Compassion event. Fitch raised over \$500 in donations. See this picture and details of the event on the cover of the *Austintown Town Crier*.



Walter explains to 5th graders the purpose of a line follow in his motorized car.



Students and parents can access all assignments and projects via Google Classroom and PLTW.org.



Owen, Justin, and Ted were all smiles producing their 3D printed Christmas ornaments for the tree.



Computer Integrated Manufacturing

- ★ Students are creating multiple VEX robotics systems using advanced programming and sensors, including, line followers and sonar. They also are creating automated assemblies using Autodesk Inventor in preparation for the unit on Manufacturing Processes.
- ★ Students designed, created, and 3D printed a holiday ornament to put on the 1st Annual STEM holiday tree.
- ★ Students visited AIS and taught the 5th graders about programming and coding basics using code.org, simple circuitry, and how to use the 3D printer.



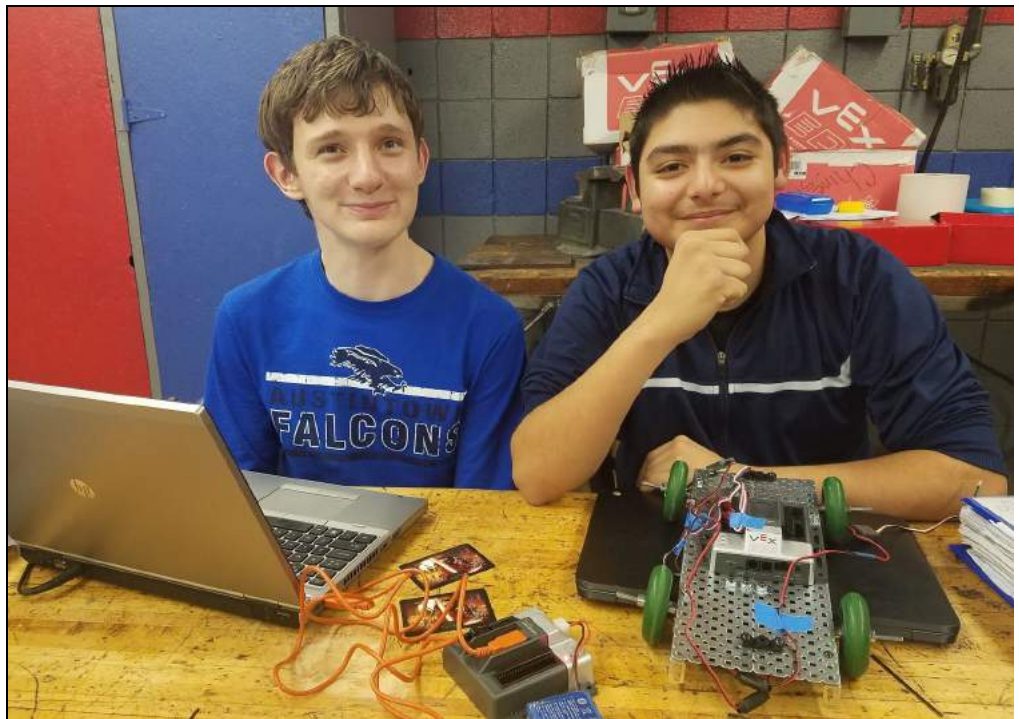
Ms. Lewis shows how the 3D printer works to 5th graders at AIS as part of the STEM Ambassadors Program.



Chad, Justin, Marcellena, and J'Nayah were in the Christmas spirit for Christmas Sweater Day!



Students at AIS shake hands with the clawbot, "Proto".



Austin and Brandon work together to both build and program their robot.



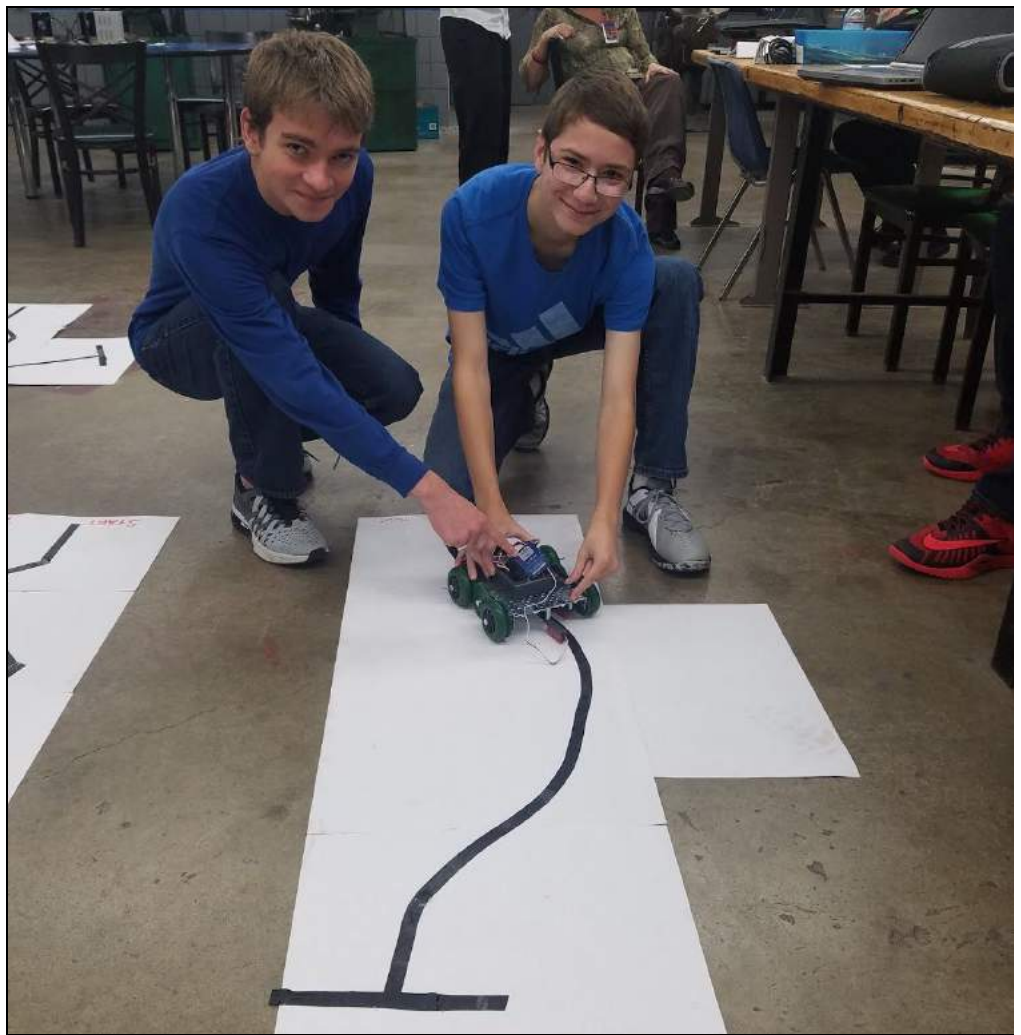
Dr. Dick from YSU discusses research in the Environmental Science Lab.



Vlad sits motionless as he is scanned using the 3D imager at YSU.



A YSU Professor walks the students through the Civil and Construction Engineering Labs at YSU.



Jackson and Robert demonstrate their robot programmed to follow the line. Upon completion of the task it does a victory lap around the room.

Trip to YSU



Ms. Lewis teaches AIS students all about 3D printing.



Dr. Dick discuss many of the priceless mineral and gems in the Mineralogy Museum at YSU.



Students were in their comfiest pajamas for Spirit Week.



Dylan was about to go for a swim during the tour of the recreational centers at YSU.



Owen, Tyler, Cedric, and Justin explore the interesting properties of dry ice at YSU.

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