

**Engaging Louisiana middle school students: Making the 3D manufacturing revolution real for all of the next generation.**

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**Outcome:** A team of researchers led by Dr. Chester Wilson at Louisiana Tech University has hit the road to engage middle school students in the next wave of American manufacturing. 3D manufacturing truly can change everything. In only a few years, everyone in America will have access to a laptop, a 3D printer, and a drone. That means that every young person has the toolkit to invent, prototype, apply for a patent, write a business plan, and kick start their own company. This puts everyone on a level playing field, limited only by his or her ability and hard work. Imagine what this training will do for the STEM graduate students of the future.

Dr. Wilson's team has been bringing a small part of this future design experience to middle school students. In partnership with Louisiana Tech's Idea Place, workshops have been put together where students create an idea for an electronic component to go on a CubeSat, a miniaturized satellite that performs scientific research functions while in space. The students worked to create a robotic device concept, illustrate the concept, then generate a 3D computer file, and finally, 3D print the component. In this case, students designed antennas which will be launched to 100,000 feet on a space balloon at a NASA site in July for testing.

**Impacts/Benefits:** Workshops have been given at the "You be the Chemist" regional competition, Lakeshore Middle School in Shreveport, and at Plain Dealings Middle and High School in rural northwest Louisiana where 78% of students are economically disadvantaged. Students were given an opportunity to design and see their ideas come to life. The Principals from Lakeshore and Plain Dealings have written personal notes of thanks, noting the kids were energized by the experience. It is our hope that these students were inspired to consider attending college and a career in engineering.

**Background:** America's greatest assets are its people. We come from everywhere in the world. We have an entrepreneurial spirit that is unrivaled. 3D manufacturing is providing a path to leverage our ability to create ideas and the information age, and bring that back into an America that makes things. Dr. Wilson's group wants to see the next wave of homegrown engineers well skilled in these techniques.



***Dr. Chester Wilson, Associate Professor at Louisiana Tech University, discusses making 3D robotic parts at Lakeshore Middle School's after school merit program. The students designed robotic parts to go into a CubeSat.***  
Credit: Alex Ulrich, Louisiana Tech University.



***Louisiana Tech graduate student Alex Ulrich works with students wiring up prototypes for the CubeSat integration.***  
Credit: Dr. Chester Wilson, Louisiana Tech University, [chester@latech.edu](mailto:chester@latech.edu).