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Rippl3D: Bridging the Gap in 3D Print Education

Introduction by Tim Shinbara, VP of Manufacturing Technology, AMT–The Association For Manufacturing Technology
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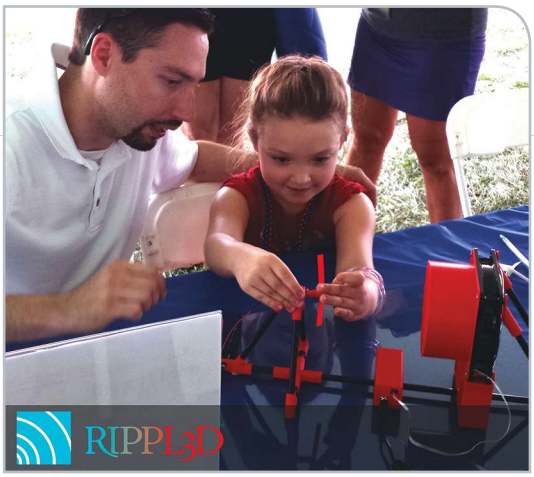
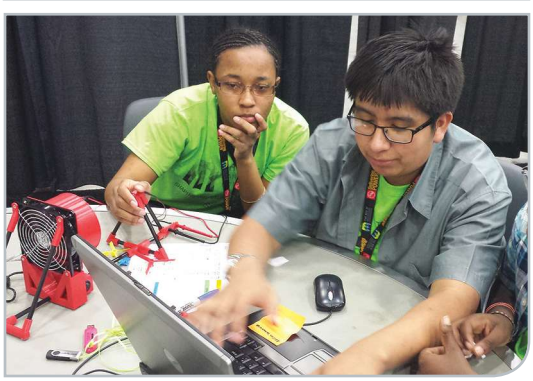
The manufacturing industry continues to focus on AM/3DP for industrial solutions as a means to advance the current state of manufacturing capabilities. While many obvious areas like materials and equipment receive due attention, one area not to be dismissed (or missed completely) is the talent pipeline to sustain and manage this evolution. AMT's Smartforce initiative focuses the talent development discussion on not just high technology, but leading-edge technologies such as AM/3DP. AMT engaged Bill Macy, founder, Ripple3D.com, to help with the IMTS 2014 Smartforce Student Summit and continues to work with Bill to advocate for such active engagement with stakeholders like AMT's members, industry end users and academia. Ensuring the manufacturing industry is aware of such resources is paramount for optimal planning and market positioning.

Educators are quickly becoming aware of the value 3D printing brings to the table in the development and implementation of STEM curriculum for our schools. As news unfolds that the Chinese government has committed to adding 3D printing machines and curriculum to 400,000 schools in China over the next 12 months, it is vital that we provide American students the skills they need to compete in the digital global workplace of the future. Rippl3D has answered this call to action by designing simplified tools that assist students and teachers in this digital manufacturing transition.

3D printing can be used in a wide variety of academic subjects. Biology classes can use 3D printing to visually demonstrate complex biological systems and life forms. And while 3D printing has unlimited applications in the arts, it can also be used to teach geography, geology and metrology. However, what we see today in education is a wide gap between the realization and the reality of 3D printing technology. Getting 3D printers into our schools is only the beginning of the story. We need to establish sustainable budgets to purchase 3D printers and filament, as well as a reasonable plan to maintain the equipment. We need to integrate 3D printing into the current system in a way that is seamless for administrators and teachers by developing a plan to train skilled teachers and to design an engaging curriculum for our students.





Rippl3D is bridging the gap between the 3D printer and the student by offering teacher-friendly tools in a Web-based environment that is easily accessible to teachers, mentors and students. These tools, in conjunction with current and new curriculum ecosystems, assist American students in learning STEM subjects with the use of 3D modeling, 3D printing and electronic test equipment in hands-on exercises. Ripple3D.com provides design challenges that are optimized for any FFF 3D printer. The free Web-based CAD modeling tool allows students to create hundreds of thousands of unique solutions that can be printed in 15 minutes or less.

The Rippl3D challenges utilize a variety of measurement tools to provide students exposure to electronic test equipment in a meaningful way. Currently, Rippl3D.com offers two versions of the Wind Turbine Challenge. One version uses a tachometer to measure revolutions per minute (rpm), and the second version uses an electric motor driven by the custom-built turbine blades to generate power. A multimeter is used to measure the generated voltage. A third challenge, the Hovercraft Challenge, tests the player's ability to design the most effective thrusters to propel the hovercraft down a straight track the fastest.

Rippl3D.com enables students to contribute their ideas to the website and to compete in these challenges. As results of each challenge are entered, students see how their performance ranks with other players on the leaderboard. Community gamification brings fun and friendly competition into the Ripple3D educational process. There are plans for three additional challenges: Water Pump, Crash Test, and a 3Dponics Challenge that looks to identify the most efficient venture siphon for watering hydroponic gardens.

Rippl3D Web-based tools enable teachers to support flipped classroom models where students formulate solutions as homework and return to the classroom to see and discuss their results. Rippl3D provides meaningful experiences for students and demonstrates how the use of digital manufacturing will play a role in the future of making.

For more information, visit Rippl3d.com or contact Bill Macy at bill.macy@rippl3d.com.