URBANDALE
COMMUNITY SCHOOL DISTRICT

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Exemplary STEM Program At Urbandale High School Brings Learning To Life Through Innovation

Urbandale High School's Introduction to Engineering Design class explores complex science, technology, engineering and math topics through the integration of mechanical design programs and 3D printing

URBANDALE, Iowa – May 24, 2016 – As leading industry sectors throughout the world continue adapting best practices to better support the ever-increasing rate of change in technological advancements, the Urbandale Community School District is responding in an equally agile way by transforming educational tools and practices with the aim of preparing learners to succeed in an increasingly, competitive global workforce. One such example is the exemplary Science, Technology, Engineering and Math (STEM) program offered at Urbandale High School (UHS) that is providing students an experiential learning environment as they are encouraged to discover, explore and examine concepts relating to cutting-edge technology, engineering and design.

Students enrolled in the UHS Introduction to Engineering Design (IED) class, a dual-credit college course, have the unique opportunity of expanding their creativity by designing 3D models in Autodesk Inventor®. As students learn the fundamentals of Inventor, a professional-grade 3D mechanical design program, they are able to bring their idea to life as they move through the design implementation process of creating a concept, developing specifications, designing a prototype and sending an appropriate file type to a 3D printer where the actual three-dimensional object can be printed in ABS plastic.

"Having students create something of their own and then see it come to life as a 3D printed final product that they can touch and hold has been a powerful experience," said UHS IED Teacher Sarah Jacques. "As an IED, algebra and geometry teacher, I enjoy helping students discover how STEM concepts are applicable throughout so many areas of their lives. Our STEM program here at UHS is truly inspiring for both students and teachers—I enjoy every minute of it."

The 3D printing industry is rapidly evolving which is one of the reasons it's so appealing to a generation of students who are digital natives and fully embrace the high rate of change that is inherent in technology. By participating in complex, hands-on activities that are immediately applied through the use of a 3D printer, students are not only gaining a deeper understanding of engineering design principles, but are more interested and engaged in a multitude of STEM-related topics. This growing interest can be seen throughout the school as students in various classes collaborate in order to bring to life their collective concept. Zach Hodgson, UHS student enrolled in the IED class, designed and created an entire set of chess pieces with Hank Puckett, UHS student enrolled in the Woodworking Technology class, who created a chess board complete with a drawer to hold the pieces.

"While designing the chess pieces, I have improved my skills in Inventor which has helped me in IED," said Hodgson. "The process of making the pieces has shown me that there are tons of possibilities for the use of 3D printing."

UHS students create a chess set through 3D printing chess pieces and woodworking class. Chessboard by Hank Puckett and chess pieces by Zach Hodgson.

As students learn the fundamentals and begin to master more involved and complex theories and principles, UHS educators customize instruction to meet the needs of students where they're at in the learning cycle. Recently, students in the IED class went through the engineering design process to take their two dimensional concept and turn it into a three-dimensional object. Zoe Carter designed a miniature grand piano and Jonah Larsen created a keychain in honor of UHS Director of Choirs Ted Brimeyer.

UHS student Zoe Carter creates a miniature grand piano during her Intro to Engineering Design class.

UHS student Jonah Larsen creates a 3D printed keychain during his Intro to Engineering Design class.

As occupational employment projections for STEM careers indicate steady growth with high demand for STEM expertise, the development of truly engaging content that piques the interest of students and connects with their own natural aptitudes and talents is of utmost importance. The coursework being developed at Urbandale High School parallels the high-speed trajectory of technological innovation by integrating the most advanced, creative and relevant STEM theories and practices through highly interactive learning experiences. This keen focus on student-centered learning in conjunction with the District's aim of transforming education in order to give students greater input, ownership and voice in their learning, is proving effective as Urbandale High School students continue achieving numerous STEM-related awards and scholarships and the District celebrates a 98% graduation rate.

About Urbandale Community School District
The Urbandale Community School District includes portions of Des Moines and Urbandale, Iowa. The District serves over 3,900 students in six elementary schools, one middle school and one comprehensive high school. The Urbandale District supports an increasingly diverse student population where 51 languages are spoken. Building on the existing foundation of excellence in education, Urbandale is transforming education throughout the District. By implementing innovative Quality/Continual Improvement strategies that create learning environments that more fully engage, challenge and motivate students, Urbandale is taking transformation from theory into practice. Urbandale prepares students for becoming lifelong learners and is a school district that brings learning to life for everyone. To learn more, visit: UrbandaleSchools.com and follow on Twitter @UrbandaleSchool.

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