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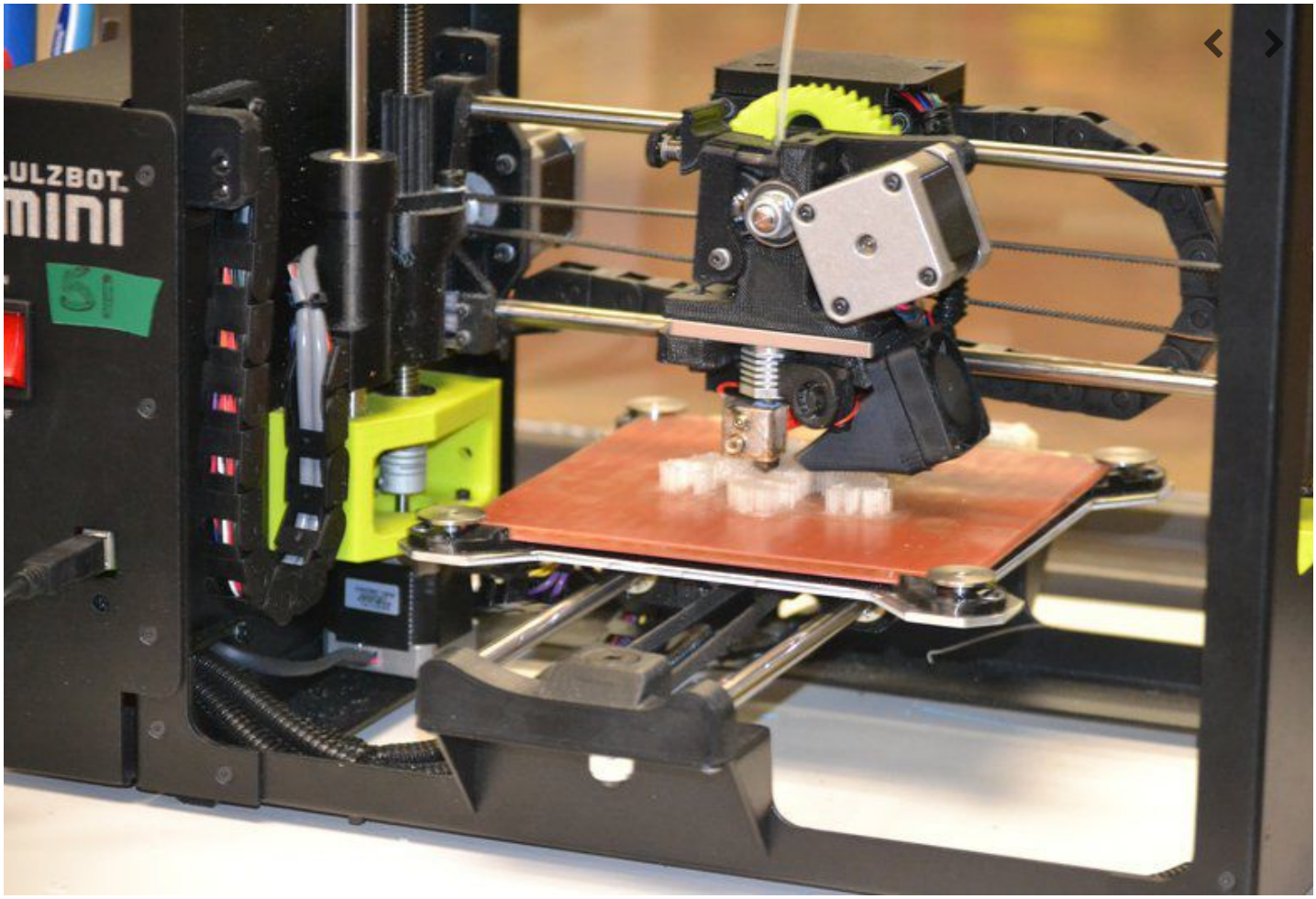
OU library showcases future of printing

By Adam Troxtell Jun 1, 2016



One of four 3-D printers constructs a model at the Bizzell Memorial Library's Innovation @ the Edge during a workshop on Wednesday. (Adam Troxtell / The Transcript)

Walking into Bizzell Memorial Library’s Innovation @ the Edge room is more like stepping through a time warp.

As the name suggests, it's a place where the latest technological advances can are applied to education. On the table nearest to the door, four 3-D printers, basically mini-factories, were subjects of a Wednesday workshop.

OU has used the machines for two to three years, but, as the workshop instructor, junior computer engineering major Joris Juru, explained, 3-D printing is becoming more accessible and more useful.

"In places like car factories, they already use it to make models," he said. "In the future, it will come more into homes. If you have an idea for what you want, you don't have to wait for someone to go and make it. It's getting to a level where everyone can use it."

3-D printing works like conventional printing in the sense that the machine creates flat layers and builds the object from the ground up.

"They can do a 2-D print, but it goes on top of each other," Juru said.

The portion of the printer that would be considered the ink cartridge is instead full of a plastic material, or filament, that is heated up to 200 degrees Celsius. Once melted, it is then spread in a pattern, like a glue gun.

Objects to be printed are first designed using computer software, such as the CURA 3D print program used at the workshop. Students were taught how to create their 3-D model in a virtual work space.

"Usually, it doesn't go well the first time," Juru told the students. "So, we learn as many techniques as possible to find one that's perfect."

Like 3-D printers themselves, the software can be complex for users not accustomed to building models. Juru said the latest software is becoming more user-friendly.

"They're trying to get it down to the basic level so everyone can understand," he said.

The only obvious limits with 3-D printing are time and size. The smallest 3-D printer at Innovation @ the Edge can print any object within a 5 inch-by-5 inch-by-5 inch space, while the largest can print an object up to about one foot in all directions.

Whereas something like a key chain can take about 30 minutes to print, a tool box that was printed in the lab took more than two days to complete.

“The challenge now is to make it faster,” Juru said.

There’s also the matter of having enough raw material. Patrick Wright, also a junior computer engineering major, said the tool box alone used about 80 percent of the plastic filament in the machine.

But there are tricks to use less material and cut down on time. Wright said objects are printed with empty, hollow spaces where no support is necessary.

3-D objects can also be made with higher or lower detail by adjusting how close or how far apart the layers of the object are made. This enables the library’s 3-D printers to make a model that roughly resembles a man’s face, up to a smaller replica of a Renaissance-era statue.

As the technology becomes more widespread – Juru said software programs for 3-D printers are becoming more industry specific – OU students will find the technology more valuable. Kyra Williams, a junior chemical engineering major and art minor who took part in Wednesday’s workshop, said she already sees the benefits.

“I know for a designing professional, it’s huge to be able to model something before spending millions of dollars on a larger scale,” Williams said.

Another, more recent development at Innovation @ the Edge allows an even closer look at a model before it’s even printed. A virtual reality station designed by Wright, Juru and Emerging Technologies Librarian Matt Cook lets users, among other things, view their 3-D model on a larger digital scale.

The headsets and complete interface allow users to view the object on a more detailed level than they would on a computer screen.

The 3-D printers are free to use by any OU student, member of staff or faculty.