

# A smart design for a smartphone

## Dollar Bay High School takes first place in design competition

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DOLLAR BAY - Smart cell phones are ubiquitous now, but handling them while driving is dangerous. So some Dollar Bay High School students created a device that allows drivers to use their phones while keeping hands on the steering wheel where they belong.

Matt Zimmer, DBHS math and science teacher, said four of his students took part in the SAE World Congress on April 21-23 at Cobo Hall in Detroit. The students' design for the cellphone holder took first place in the Additive Manufacturing Competition for high school students.

Additive manufacturing is also called 3D printing, and the high school has its own printer. 3D printing involves creating an object with layers of various materials. The DBHS printer uses a special type of plastic.

### Article Photos



Kurt Hauglie/Daily Mining Gazette

From left, Cami Daavettila, Daniel Foix, and Alexander Provoast demonstrate the smart phone holder they created using a 3D printer, which creates items from plastic. The design won first place in the Additive Manufacturing Competition for high school students at the SAE World Congress on April 21-23 at Cobo Hall in Detroit.

The students who took place in the competition were Cami Daavettila, 10th grade, Daniel Foix, 12th grade, Megan Kangas, 12th grade and Alexander Provoast, 12th grade.

Zimmer said the purpose of the competition was to show the work students are doing with 3D printing. Because the work DBHS are doing with 3D printing is fairly well known, Zimmer said the students didn't have to apply to be part of the competition.

"We were actually recruited," he said.

In March, Zimmer said students were given the challenge to create the smartphone holder.

The competition in Detroit took place over three days, Zimmer said, with three schools competing each day for a total of nine schools.

Daavettila said for the competition, the students were charged with a fairly obvious task.

"We had to come up with a design we thought would work," she said.

Provoast said for their design they had to come up with a way to make a working ball joint.

"We also wanted (the device) to be adjustable," he said.

The design the students came up with involves a plastic clamp with spring action to hold the phone itself. The clamp is at the end of an arm with a ball joint at its end. That fits into a base, which is mounted into a CD player. The ball joint allows the phone to be viewed vertically and horizontally.

Foix said the trial and error process required the most work with getting a properly-working ball joint system.

"As we went on, it was easier to come up with designs that didn't work," he said.

Provoast said it took 11 printings to come up with an acceptable ball joint design.

Funding for the DBHS 3D project came in part from Square One Education Network, which Barb Land, Square One program director, wrote in an e-mail is involved with many K-12 school programs in the state.

"The Square One Education Network is a Michigan based non-profit educational grant funding organization dedicated to providing unique opportunities in (Science, Technology, Engineering, and Math) programming," she wrote.

"Square One has been a partner at Dollar Bay High School through a grant written by Matt Zimmer for about four or five years now. We have helped provide equipment and experiences to his students through his engineering classes and the (Remotely Operated Vehicle) program."

Land wrote Square One took part in the SAE World Congress in Detroit, also.

"Square One partnered with the P3 Group and SAE World Congress to present an Additive Manufacturing Tech Hub on the show floor at Cobo Hall," she wrote. "Each day Square One brought in three different teams of high school students from participating schools around the state. These schools each have a Square One-funded, teacher-built Delta 3D printer in their classrooms for student use."

Houghton High School students with teacher Greg Staricha also participated in the Detroit event, and they won first place for technical skill, Land wrote.

Zimmer said during the competition, students were given the task of creating something that could be used in an office, and what they designed was their phone holder with a base that could be set on a desk or other flat surface. That design was also a winner.

Foix said the competition was close throughout the day they competed, and Provoast said the team was pleased with the results.

"We were pretty happy," he said.

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