Pincher Creek's Austin Bruder finalist for ASET Capstone Project

Pincher Creek Echo (Print Edition) Riley Cassidy
Today • 12:20 AM
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A team of engineering technology graduates from Lethbridge College had their capstone project selected as a provincial finalist for the Association of Science and Engineering Technology Professionals of Alberta (ASET)'s 2020 Capstone Project of the Year.

Engineering technology students from SAIT, NAIT, Red Deer College, and Lethbridge College group up to complete a capstone project at the end of their programs.

Traditionally, two projects are submitted from each institute to be considered for ASET's Capstone Project of the Year.

This year, Austin Bruder, raised in Pincher Creek and a graduate of Lethbridge College's engineering design and drafting technology program, made the cut as a provincial finalist along with his team mates Ralph Dabao and Nathan Mc-Murray for their design of a more break-resistant lacrosse stick.

Bruder said the process for the new stick design started with some trial and error, starting with testing the strengths of a standard lacrosse stick.

"We started off by taking an existing lacrosse stick and putting through a three-point flexural test and seeing what it takes to break it. Once we had our benchmark we saw how much it weighed because we want to shed weight, not gain too much," said Bruder.

"We determined what type of aluminum would get us the most strength for the weight, and then we used Autodesk Fusion 360 to run it through generative design and put in some variables that we gathered through the testing," he said.

The result was a stick that was three times as strong as the stick that was tested, but was also twice as heavy.

As a former lacrosse player, Bruder said the stick would be viable for the sport depending on player preference.

"I was much more of a heavyweight, so I like my stick to be able to take a hit. Some of the guys who like to do one handed dangles, cradle outside, and do dekes and stuff would probably prefer lightness."

He said his group settled on the idea because of its relative simplicity and real world application.

"We were restricted by time, so we wanted to do something simple that we could make better, because that's the essence of what engineering is- it's to solve a problem," said Bruder.

"We thought of something we were passionate about, so it seemed like a really good idea to just go ahead and make this lacrosse stick stronger. It's simple, but if it worked out it could open a lot of doors for stuff."

The most challenging part was getting up to speed with generative design and the software that was used, he said.

"It's such a new technology, and it's kind of the edge of where things are at for design. The college had never really done stuff with it, so we were on our own figuring that stuff out," said Bruder.

He added that he believes generative design will revolutionize the engineering field.

"Generative design will start to become main stream, and start replacing a lot of other ways of designing things. It's important to start getting younger generations interested, because it can make things that humans can't."

Bruder and his group mates are now Technologists in Training with ASET and are using their skills within the workforce.

He said the group didn't initially appreciate the significance of being a Capstone Project of the Year finalist.

"It was suddenly a big deal, and we're quite honoured by it. We're very proud to be honoured by ASET."

Barry Cavanaugh, CEO of ASET, said the lacrosse stick project spoke to the group's innovativeness, and while they weren't the capstone project of the year, he added being a finalist is impressive in itself.

"Simply being a finalist is a big deal. (The project) demonstrates quite a lot of innovation and ingenuity, which is precisely what we're looking for," said Cavanaugh.

He said what made the project stand out was its real world application.

"They look for a real world problem and try to find a way to solve it that will help people in a real world kind of way. Truthfully, this design work is intended to make it better for people who play lacrosse," he said.

He added that being finalists will only give the group more opportunities within the working world.

"There's a lot of interest from companies and engineering firms who are paying attention to who is featured for the (Capstone Project of the Year), and I'm pretty certain that being a Capstone finalist is something that ranks pretty high on the list of criteria for potential employers."

Cavanaugh said ASET is happy to have the three aboard as technologists in training.

"They belong with us-they belong with the best of the best."

Currently Bruder is using part of his diploma doing surveying work for pipelines in northern Alberta for Global Raymac Surveys, but he said he wants to practice his profession closer to home in the future.