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## Guitar-making workshop at Bozeman High aims to engage students in STEM

By Shaylee Ragar Chronicle Staff Writer 6 hrs ago



High school and community college teachers from around the country participate in a five-day-long STEM guitar building workshop on Wednesday, July 24, 2019, at Bozeman High School.

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Rachel Leathe/Chronicle

During a lesson on electrical wiring in Bozeman High School's wood shop room, Rino Mazzucco asked a room full of students to think about a very distinct sound.

"Have you ever heard The Beach Boys' music?" Mazzucco asked.

That kind of sound requires a particular type of wiring, Mazzucco explained. He used the example to engage his students, and has experience as a teacher at Mesa Community College in Arizona.

However, his “students” in Bozeman are also teachers, attending a workshop to learn how manufacturing a guitar can engage teenagers in science, technology, engineering and math (STEM).

The National Science Foundation STEM Guitar Project was founded in 2007 and has been hosting these week-long workshops across the country since 2010. High school and college educators are eligible to apply for the free course, which is paid for by grants from the foundation.

Founder Mark French said the idea is to make STEM fun.

“We want to teach STEM subjects, but one of the hardest parts is getting students intrigued,” French said.

French is a professor of mechanical engineering technology at Purdue University. He has a Ph.D in aerospace engineering and worked for the U.S. Air Force for 10 years before becoming a teacher. He had started making guitars as a side job, and made contacts in the guitar manufacturing business.

French then had the idea to use guitars and music to spark interest in STEM.

“Once that little fire starts, it doesn’t extinguish,” French said.

Teachers who participate in the workshop make their own guitars throughout the week using a variety of technical skills — computer-aided design, woodworking, soldering and electrical wiring, among others. French said the workshop aims to give the teachers all of the skills and educational materials they need to take the project to their classrooms.

Rachel White, a Belgrade High School science teacher, took part in the workshop. She said she already has a place picked out in her classroom to hang the sparkly blue and white guitar she made.

White doesn’t do much woodworking in her chemistry and physics lessons, but guitar-making goes deeper than the physical design.

“In my STEM class, I would love to take my students through the physics of why an electrical guitar works,” White said.

White said before she can start a guitar-making program, she’ll need to find money for materials.

While the workshop is fully funded by the National Science Foundation, teachers need to find ways to get their own programs off the ground. French said he hopes schools can make it work through fundraising, and later on by selling the guitars they make.

French has continued to make guitars himself, sells them and gives all of the proceeds to his nonprofit.

French said he often sees teams of teachers take part in the project. A technical skills teacher, math teacher and science teacher from one school can all pull lessons from guitar-making workshop to use in their respective classrooms.

That’s the ultimate goal of the workshop.

“(The project) only matters if it makes it to the students,” French said.

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Shaylee Ragar

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