

IES Showcases Its Makerspace Geared Towards Innovative STEM Curriculum

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Kayla Anderson / Special to the Tribune



This is the third year of having the Makerspace.

Provided / Kayla Anderson

What first struck me about Incline Elementary School when I pulled up to the building is how a well-dressed man greeted every car, opening the door for the student and watching to make sure they made it safely inside, like a high-end valet service. (I would later learn that the man who welcomed the students was Principal John Stern.)

After his morning announcement to all students, Stern whisks us into Trina Kleinhenz's classroom, otherwise known as the Makerspace. In these classes, "Ms. Trina" as her students call her, brings Gifted & Talented strategies to all students through project-based learning, development of critical thinking skills, discussions, and hands-on/self-directed activities. She collaborates with other

teachers to create cross-curricular projects, including computer science and coding robots. While still in elementary school, students are learning to perform specific tasks in engineering design and by offering these programs to all students, the school district is promoting equity and diversity in the field of computer science beginning early in their academic careers.



Students Sloane (left) and Julia (right) participate in the class.
Provided / Kayla Anderson

This is Incline Elementary School's third year of having a Makerspace. Bringing it to fruition was an immense effort largely due to Mary Danahey and Sharon Schrage from the Incline Education Fund, who wrote grants and raised money to support the Makerspace project which later led to the recognition from the Nevada Governor's Office of Science, Innovation and Technology for it to be deemed a STEM Designated School.

“In this class we create things with an emphasis on robotics because that’s my background,” Kleinhenz says. “We focus on creativity, communication, critical thinking, and collaboration. Part of the reason we wanted the Makerspace is because the trend is going towards computer science”, explaining that she also manages the Masterpiece robotics club in the 5th grade class.

They build robots and code them to do missions and perform certain tasks, entering their inventions in a competition/robotics parade coming up in December.

After she says this, Ms. Trina’s well-behaved third grade students come marching in, taking their places at the group tables in the middle of the room.

“Who already built a carnival game?” Ms. Trina asks the students. Most of the kids raise their hands. She then shares a presentation reviewing what they discussed in prior lessons, asking the students what kind of forces stood when building and programming their game (like friction, velocity, gravity, and acceleration). Lucy and Jack both commented that they noticed friction, “because the Legos were bumpy”, they said.



Ms. Trina teaching her third grade class.
Provided / Kayla Anderson

LEGO Education kits came out of the closet, and the kids got to work on moving through their iPad prompts to help with programming their games. Fabian and Tony at one table were building a pinball game while Sloane and Julia at the adjoining table built a bowling one. The girls tried to troubleshoot a mechanical mechanism that helps launch the balls, and Ms. Trina came over to help. They tried changing the rotations and eventually realized it was the motor.

“This is fun,” Sloane says, and after figuring out the problem added, “connecting the hub was the hardest part”.

On the other side of the room, a group of Spanish-speaking girls show off their zipline (or what Mary Danahey calls a slackline Ferris wheel). We see how the hub powers the motor that moves the contraption from one side to the other. It's impressive.

After the 45-minute class, the 5th graders come in. Ms. Trina explains to them how trying, failing, and trying again is the only way to persevere. This more advanced class uses robot kits that do more advanced things; for instance, that day's mission was to use the light sensor, make the arm go up and down, and use the arms to grab things. She shows a Lego Education video demonstrating how it works, and tells the students, "you have to decide which code is going to work best for how you want it to work and what you want it to do."

A group of girls named their robot "Jeremy" and placed him on the ground with a bunch of obstacles. As Jeremy knocks one of the cones over, one of the girls says, "Hmmm, he didn't sense it" and tries to figure out how to get Jeremy's sensors more exact.

While they work on this, Mary Danahey mentions that the Incline Education Fund made a \$100,000 investment into the Makerspace and we marvel at how engaged all the students are, regardless of age, gender, or ethnicity.

"When the kids are engaged, they pay attention," Danahey adds. "Collaboration, thinking critically, creativity, and communication- the four C's- you need that across all disciplines and that translates to the higher grades. Bringing this program down to the kindergarten level gives them eight years to raise the bar all through their education."

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Danahey points out a kid who is normally easily distracted in class, but today he's excited to show off how his robot gears worked.

After the 5th graders move on to their next class, Ms. Trina emphasizes what kind of impact the Makerspace makes on her students.