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Kids Learn STEM Through Fashion Design

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By Amy Golod

Simon Hopkins, a senior at Park City High School in Utah, works as an instructor at Zaniac, a national science, technology, engineering and math (STEM) enrichment franchise. Hopkins recently concluded one of Zaniac's first six-week fashion design courses at the company's Park City campus. He began each week's class with a brief fashion history lesson, teaching that Converse All Star shoes were originally designed for basketball players, and that Nike, Inc., was named after the Greek goddess of the same name.

He would then suggest a project for the students to complete on Inkscape, open-source vector graphics software, leaving the majority of the class time for the students to create their own clothing designs, "interpreting what I [had] taught them between the history of fashion and the instructions on how to use Inkscape," he says.

Fashion design is now taught at all six Zaniac campuses. The 90-minute sessions are weekly and organized with a 5:1 student-to-instructor ratio. Fashion design is for fourth- through eighth-graders, but Zaniac offers other after-school programs

and camps for kindergarten through eighth-grade students and focuses on a variety of STEM activities such as, robotics and 3-D printing. Zane Math, the original program from which Zaniac classes grew, provides customized math enrichment. There are currently two campuses in Utah, three in the Northeast, and one in Miami. Other locations are scheduled to open this fall.

In May 2015, the company had four campuses; at that time, approximately 70 percent of all students enrolled were boys.

"We wanted to encourage a greater audience for individuals being integrated into STEM, and, particularly, we wanted to cater a course and curriculum that may be more appealing to girls," says Sidharth Oberoi, president and chief academic officer at Zaniac. "We decided to go down the route of a fashion design course that is much more heavily integrated into technology versus what has traditionally been thought to be fashion design."

The idea worked. Fashion design is open to all students, but, as of now, all participants have been girls.

Oberoi says students create a digital mood board for a collection, developing a theme and working with one another to do online research to choose styles they like. Once students start working on Inkscape, he says, they use math and geometry.

Students design simple shapes using points, curves and other vector graphics which they might combine for a more complex design. For example, they might create a rectangle by plotting four points, or a shape with curvature as they design elements of an article of clothing, instructor Hopkins explains.

In addition, students 3-D print an accessory that ties into their collection.

Cate Hadlock, a sixth-grader at Canyon Rim Academy in Salt Lake City, says she had been interested in fashion design since she was a young girl so she wanted to take the class.

"She has always been very good herself at putting things together and this was a chance for her to explore the aspects of fashion design in terms of computers, so it was really great to see how she learned the program," added her mother, Ruth Hadlock. "I just think in this day and age where kids are learning about computers so young, it's easy for them to grasp the concept of how to do these things and it just opens up an entire new world for them."


"We're hoping to make the message be apparent that computer programming or working with technology isn't as intimidating as previously thought," Oberoi says.

Hopkins says he observed the girls in his class work through problems, sometimes talking with their peers or asking him questions, and, as a result, he thinks they now have more confidence. They know they can find the solutions and create a piece of visual art, he says.

Rachel Sheinbein, president of the board of Expanding Your Horizons Network (EYHN), a nonprofit organization that organizes one-day conferences globally to provide girls with exposure to STEM, emphasizes the importance of role models in STEM fields and engagement in hands-on activities to pique students' interest in those disciplines.

"It can be anything that is doing workshops that are hands-on and showing the connection to a career in hopefully a topic that people are enthusiastic about," she says. The connection between STEM and a field such as fashion when speaking to girls,
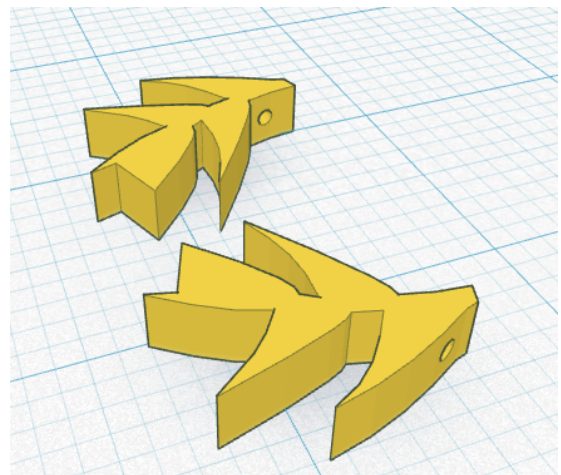
however, may not need to be so explicit, she points out. For example, as a high school freshman, she attended an event similar to the EYHN conferences and built a dialysis machine. "I just remember that it was nothing that was girl-oriented in particular, but I remember it was hands-on and, 'Oh, wow, this can make a difference in people's lives.' That really resonated with me and it seems some of the research is going that way."

On the one hand, there is the issue of attracting more girls to STEM, but, on the other hand, there is the issue of greater exposure to technology for both genders via academic enrichment programs. Oberoi says that schools use technology for math and reading lessons, but not to teach technology, and the latter is what he feels Zaniac courses offer. Flavia Naslausky, co-owner of the New York City and Westport and Greenwich, Connecticut, franchises, says that even in areas of the Northeast with strong public and private education, schools cannot necessarily keep pace with changing technology.

Eric Anctil, associate professor of education at the University of Portland, consults schools and businesses about integrating technology in curricula, classrooms and professional development. He explains: "I think that one of the things we risk in this country is that because education is so large, it can't be very nimble. And, change, when it comes to integrating things like technology more into a standard curriculum, likely isn't going to come from within inside the educational machine."

"It's the private market and private industry saying, 'We can be nimble, we see a lot of money and opportunities in these places. Let us show you where the gaps are and let's fill them with things like enhancement or enrichment or extra-curricular technology, curriculum, instruction' … so they become the change mechanism."

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