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Math Mentors

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Sharing their love of math



Quick. Look at this picture. Do you see a bunny or a duck? Turns out, your answer may hinge on your gender.

The statistics around perceptions of optical illusions relating to gender is anything but a typical science fair project, but Madison Dreger, a local eighth grader, happily tackled the topic.

Dreger was one of six Yamhill-Carlton Intermediate School (YCIS) students who worked side-by-side with six Linfield College math majors and minors on a series of science fair projects emphasizing mathematics.

The mentoring program, in its first year, was funded by a Mathematics Enrichment Grant from the Dolciani Foundation and the Mathematical Association of America. The program targets students at YCIS who are ready for more challenges in mathematics and to encourage them to study math in high school and beyond, according to Jennifer Nordstrom, professor of mathematics at Linfield.

“When I’ve judged science fairs in the past, the really big difference has been access to resources,” Nordstrom said. “For example, students may have had a parent who was a scientist or the ability to get into a lab. That was one of the things I really wanted to provide to the Yamhill-Carlton students – access to computers and people who could help them. They’ve been able to do things they wouldn’t otherwise do until college.”

Lisa Jacobs, YCIS science teacher, said the project dovetails with the district’s emphasis on Science, Technology, Engineering and Math (STEM) curriculum. She hopes this new mathematical focus as part of the science fair will further encourage students’ interest in mathematics and expand their learning beyond the classroom.

“We need to get kids STEM exposure because those are the positions of the future,” she said. “If they’re not prepared for that, then we’re not doing our jobs.”

YCIS student Grace Armstrong worked with Linfield mentor Katie Rees ’16 to analyze the golden ratio, 1.618, a ratio of numbers that is visually appealing, as it appears in different genders’ faces. The ratio is said to be the basis of facial beauty and is used to create a ‘facial mask’ that portrays ideal beauty.

“I was intrigued by the idea, but I didn’t really know that much about it,” said Armstrong. “Also, I heard a lot about it in nature and it seemed really interesting.”

In addition to math, Armstrong learned valuable lessons about college during her weekly sessions at Linfield.

“It’s a somewhat scary reality check, but it’s a really cool experience to realize how close you are to getting to go to college,” she said.

Kate Gomes tackled the Fibonacci sequence, a concept related to the golden ratio, with mentor Jennifer Moranchel ’19. The sequence is a series of numbers where the next number is



Students from Linfield College and Yamhill-Carlton Intermediate School gathered at the YCIS Science Fair in February after working together on a series of projects emphasizing mathematics. Front row, from left, Emma Prine, Grace Armstrong, Jennifer Moranchel ’19, Jennifer Nordstrom and Spencer Waechtler; back row, from left, Lisa Jacobs, Katherine Gomes, Steven Holland ’16 and Madison Dreger. Not pictured, Phoenix Elliott, Katie Rees ’16, Katelin Swanson ’18, Michael Metter ’16 and Heather Germaine ’15.

found by adding up the two numbers before it. After working with many sequences using different starting numbers, they found that “any ratio of consecutive terms, if you use that same recursion, will go towards the golden ratio,” Gomes said. “Math just clicks for me. I like the solving part and discovering something for yourself.”

Other students explored checkers strategies using statistics, the physics of wireless bungee jumping and the physics of kicking soccer balls. The intermediate students made weekly visits to the Linfield Campus to research these topics and prepare for the February science fair at YCIS. Armstrong, Madison and Gomes moved on to the NWSE state fair at Liberty High School, where Armstrong won second place and Gomes won first place in the math category.

In addition to Moranchel and Rees, Linfield mentors included Heather Germaine ’15, Steven Holland ’16, Michael Metter ’16 and Katelin Swanson ’18. The Linfield mentors gained just as much from this experience as the science fair participants did.

“I have a number of younger siblings and I’ve always enjoyed helping them out with school,” Holland said. “I thought this would be a great way for me to help some students.”

“I have had great teachers and professors that have influenced me, and I hope to one day be someone like them and be able to influence kids like they’ve influenced me,” Moranchel said.

– Natalie Kelley ’18

See a slideshow of photos, linfield.edu/photogallery