



Valparaiso's Math REU Helps Students Make Informed Choices about Their Futures

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Lara Pudwell, associate professor of mathematics and statistics at Valparaiso University, recalled Mike, a rising sophomore when he applied to The Valparaiso Experience in Research by Undergraduate Mathematicians (VERUM), the university's NSF-funded math REU. Mike's application was filled with uncertainty about his professional future as a math major. Although many students apply to REU programs confident that they want to go on to graduate school, Pudwell said that "blank slate" applications such as Mike's are not necessarily a bad thing.

“We really want the students with questions so we can give them the experience and opportunity to answer them,” said Pudwell.

Mike, an African American man from the Chicago area who attended college in California, did participate in VERUM in 2011 and later went on to do two more REUs. He called his experience at Valparaiso “transformational” and is currently enrolled in a PhD program researching a topic that he originally worked on with Pudwell.



While the hope is for VERUM participants to go on to graduate school as Mike did, the goal of the program is to recruit students from demographics who are traditionally underrepresented in math and are coming from colleges that do not have undergraduate research programs. While most REUs are for rising juniors and seniors, VERUM is unique in that it is for rising sophomores and juniors.

Zsuzsanna Szaniszlo, professor of mathematics and statistics at Valparaiso, said, “By the time they are seniors they know what they want to do. Catching them early allows us to have more of an impact.”

VERUM is structured as a nine-week REU, and participants spend the first two weeks ramping up with activities and lessons that “level the playing field,” said Pudwell.



Eighty undergraduates – nine each summer – have completed VERUM since it began in 2005. Working in teams of three, the students undertake research projects that relate to the VERUM faculty’s research.

According to Rick Gillman who wears many hats at Valparaiso including director of sponsored and undergraduate research, “Three is a pedagogically sound number for a team. It allows for mediation and disagreement, but no one can slack off, which can happen in a larger team.”

The team approach also allows students to experience what it’s like to work as mathematicians.

“Mathematics is usually done in a community, not as a solitary venture,” said Szaniszlo.

VERUM provides real-life experience beyond lab work, however. The students present their research at a regional conference for Indiana undergraduate math researchers at the end of the summer and then six months later at the Joint Mathematics Meeting. Some might also present at their own institutions as they leave VERUM with a draft of their paper, a team presentation, and a poster.



The students also do weekly presentations on Fridays to the VERUM group and attend Wednesday brown bag lunches at Valparaiso where they meet all the students doing undergraduate research during the summer. At these lunches, students take turns doing presentations on their work.

Exposing students to professionals and graduate schools is another important aspect of VERUM. A guest speaker joins the program on Fridays for a presentation and informal discussion with the students. The program also employs a graduate student from another university which helps bring a contemporary point of view to the program (and next summer it will be a former VERUM participant). There are also field trips to Purdue University and the University of Notre Dame to see the physical spaces and meet with faculty and students there.

“We want to give them information so that they can make their own decisions,” said Pudwell. “They might decide they want to pursue graduate school, but if they choose not to do that, at least it’s an informed decision.”

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