

# AN EXPERIENCE IN MENTORING: SHAPING YOUNG MATHEMATICAL MINDS

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## INTRODUCTION

The Math PLUS program is a partnership between Linfield College and a local middle school, which seeks to encourage more mathematics in local and regional science fairs. For the past three years, a few math majors and minors have spent their Jan Term working with and inspiring middle school students to work with challenging math in their science fair projects that are required to have a mathematical focus.

## PROGRAM GOALS

- To provide mathematical research opportunities to middle school students.
- To increase access to mathematical enrichment opportunities for talented middle school students.
- To increase the visibility of mathematics in local and regional science fairs.

## PARTICIPANTS

- 5-8 student/mentor pairs per year
- 21 Yamhill-Carlton students, 12 girls and 11 boys
- 19 Linfield mentors, 13 women and 6 men
- Yamhill-Carlton students represent a wide variety of socio-economic backgrounds. Many of the participants would be first generation in college.
- At least 4 of the mentors plan careers in teaching middle or high school math.



## ANDREA'S EXPERIENCE

Participating in the Math PLUS program was a wonderful experience. I was able to teach my mentee complicated statistics formulas that I had been learning in my Probability & Statistics course. It was astounding to see how she was able to grasp these tough formulas, even though she was so young and not far into her mathematical career. Overall, working with my mentee reassured my plans of working with students as a future math teacher.

## JENNIFER'S EXPERIENCE

As a future educator, my take away from the Math PLUS program included seeing how enthusiastic students were about pursuing topics of their interest. This emphasized the importance of appealing to student interest when writing lesson plans and how doing this can enhance the standards that are currently in place as well as the learning environment. Making math accessible and interesting to students could help spark their interest in mathematics and help them perform better in the classroom.

## RUBEN'S EXPERIENCE

Although I know kids are capable of greatness, Math PLUS set new expectations for them. After having the privilege of mentoring an eighth grade student and seeing their hard work, it was clear all these students could learn concepts typically associated with older students, including college students. This was possible because these students were given the proper resources and support system so it is clear to me now that younger students can do more than what is placed in front of them.

## PROGRAM OUTCOMES

2015-16

- Four projects proceeded to regional STEM fair
- Three went onto state STEM fair
- Two projects placed first and second at state

2016-17

- Five projects proceeded to regional STEM fair
- Three qualified for state STEM fair
- Three projects received awards/recognition

2017-18

- 6 projects qualified for regional STEM fair
- Three presented at regionals and all qualified for state
- 1 project placed 3<sup>rd</sup> in environmental science at state

## PAST PROJECTS

- Using statistics to determine if there is a correlation between certain proportions in human faces and the golden ratio.
- Using statistics to determine if wildfires impacted fish counts in the Columbia Gorge.
- Analyzing the limit of the ratio of consecutive terms in the Fibonacci-like sequences.
- Understanding the derivative of the exponential function through limits and experimentation.
- Finding and proving patterns in Julia sets.
- Determining how large a theoretical violin has to be in order to be of inaudible frequency.

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