

## Department of Mathematics Colloquium

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### Down the Rabbit Hole: The Ways Students Interpret and Use Summation Notation



Prof. Sean Larsen  
Portland State University

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3:30 - 4:30pm  
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My project team and I were conducting an instructional design experiment with a pair of undergraduate students and asked them to use summation notation to express a Riemann Sum. Although the two students had very successfully completed a full year of calculus, and had no trouble writing the sum in expanded form, they experienced great difficulty trying to encode the sum using summation notation. They were not at all sure how this notation was supposed to work so we began to wonder whether uncertainty about this notation was common. This inspired us to develop a short survey consisting of three tasks involving summation notation and administer it to students enrolled in a variety of undergraduate mathematics classes, ranging from Calculus 1 to Introductory Real Analysis. In this talk I will discuss the results of this survey study and our ongoing efforts to make sense of the wide variety of responses we received. The audience will be invited to follow me down the rabbit hole as we try to understand this notation from the students' perspectives.