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Math Education Project and RSO Creation

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March 2023

Honors Project Reflection

Across the country, there is a shortage of teachers, particularly Mathematics teachers. There are many reasons for why that may be the case, some of which can be seen at the undergraduate level even here at the University of Nebraska–Lincoln. Throughout my time Majoring in Mathematics Education at the UNL, there have been several instances when I almost gave up in being a mathematics education major. For my Honors Project, in collaboration with two other mathematics education majors, Hannah Molskness and Evan Ericksen we investigate the experiences of students enrolled in the Mathematics Education Program at the University of Nebraska–Lincoln and created a Recognized Student Organization (RSO) as a result.

The Mathematics Education Major at UNL puts a large emphasis on mathematics courses. These courses range from the sequence of Calculus courses, differential equations, statistics, linear and abstract algebra, proofs courses, and then eventually mathematics courses for teachers. These courses are integral in helping preservice mathematics teachers become experts in the field of mathematics, but one somewhat unfortunate thing about these courses is that they may deter potentially amazing teachers from becoming teachers. For example, in one of my math courses that I particularly struggled with I often had to go to office hours. One time during office hours a math professor told me that “good students fail this class all the time” and “I think you need a better mathematical intuition.” These statements made me feel as though I was incapable of succeeding in this class and that I might be incapable of becoming a math teacher because of this course. Unfortunately, these experiences of mine seem to be like that of many other math education students. Fortunately, for me, I had an amazing friend (whom I met

through the Honors Program) that happened to also be a math education major that really helped support me and get me through this and other challenging moments as a math ed major.

One part of the structure of the math education program that may also contribute to students dropping out is that you don't know many other people with the same major until the last couple of semesters. However, throughout the time prior to the teaching education program specific classes, mathematics education majors are primarily taking all the same classes. Often, they don't even know each other. For example, I took many math courses and I later found out that other people whom I am now well acquainted with were also in it. However, if we were able to know each other earlier on we could help support each other and have a less stressful and more enjoyable time in the program together. Also, perhaps other math ed majors would stay math ed majors. These are a couple of the main reasons that started to get us thinking about creating a RSO.

When it came time to complete my Honors Senior Project, I wanted to take this opportunity to do something. I thought why I should just write a paper when I could do something hopefully impactful. I wasn't quite sure what to do. However, after talking with two other honors students that are also Secondary Mathematics Education Majors, we devised a plan.

We decided to work together to look at the experiences of Mathematics Education students at the University of Nebraska–Lincoln and then enact improvements, which led to the creation of an RSO (PEMDAS, Pre-Professional Educators of Mathematics Doing Awesome Stuff).

There were three main phases of this project including the planning, data collection, and implementation. The first phase, perhaps the most challenging, was the planning. We had lots of

ideas but weren't exactly sure what we wanted to do. However, by continuing to work in collaboration with our advisor we were able to come up with an initial plan of looking at the experiences of mathematics education students. We decided to focus on the experiences of other math education students at UNL as this would allow us to gain a better understanding of the highlights and areas of improvement for the program.

Before we started the data collection, we had to submit an IRB. This took a while and was a bit of an annoying process, however, this experience in and of itself was valuable. It helped give me a better understanding of the research process. After we got it approved, we moved on to the data collection.

For the data collection phase, we had two main parts. The first is a survey of the current and former students of the Math Education program at UNL. We asked a variety of questions. Including asking why people choose to be a Math Education major, asking people to rank different parts of the program, asking people to rank the classes that they took and the usefulness of them. We had some differences in the questions that we asked to the current math education majors and to the former ones. With the questions that we asked we hoped to better understand student experiences through the math education program at UNL and possibly shed some light on something that we could do to help improve it.

Through the survey, we learned a lot about how current and former students of the program felt. It was interesting to see that some of the parts of the program that some students felt were the most useless, to other students seemed very beneficial. That helped showed me that one single story or opinion does not define the effectiveness of a program or course. A couple of my biggest takeaways include that some of the higher-level mathematics courses not specifically for math education majors often don't seem that beneficial and even in some cases

those deterred people from the major. For me personally, that was something that I could relate to. Another takeaway is that nothing can prepare future math teachers like being in middle school or high school classrooms. This came as no surprise, as in my experience my practicum and student teaching experiences were so foundational in my development as a teacher. That last takeaway, perhaps the one that meant the most to our project, was the importance of a community amongst your peers/cohort. Having peers to collaborate with and work through challenges appeared to be something that many students throughout the program deemed important.

The next phase of the data collection was conducting interviews. Before we did this, we had to look over the data. After doing this we decided to select people who had well developed survey responses. Then the interview allowed an opportunity for the interviewees to elaborate more on their experiences. I thought that this was a cool experience allowing me to learn more about student experiences through the program as well as learning how to conduct the interviews themselves.

After learning what we did through the data collection and our own experiences. We worked to create an RSO. Creating an RSO at UNL is not a quick process. It took us about one whole semester to get everything done. One of the first things that we had to do was write a constitution. This allowed us to think about the goals of this organization and how we and future leaders of the organization should go about reaching those goals. After writing the constitution we had to get it approved by both the Student Leadership, Involvement, and Community Engagement Office (Slice Office) and the ASUN student government. Getting both approvals took time but eventually we got everything approved.

Through the creation of this organization hope to help bridge the gap between fellow math education and enable a space for a community to form earlier on in students' college experiences. We decided to call the organization PEMDAS, which stands for Pre-Professional Educators of Mathematics Doing Awesome Stuff. It was a bit of a joke at first as PEMDAS is an acronym used from the order of operations while solving expressions that have multiple operations, but the name stuck.

The mission of the organization is that:

“PEMDAS is a pre-professional club that aims to create a community within the math education program. It is our mission to build community and support future math educators in ways that only math courses cannot. Members of PEMDAS will reap benefits such as networking opportunities, getting a broader sense of purpose, and receiving access to a community of semi-like-minded individuals. PEMDAS works closely with the Teaching, Learning, & Teacher Education department of the College of Education and Human Sciences.”

We truly hope that this organization will help connect fellow math education students and allow them to form a strong community that can help them throughout their time at the university. We think that an RSO is the best way to help students within the math education major to connect with each other and build a cohesive cohort that many mentioned in the surveys.

On March 2nd, 2023 at Carolyn Pope Edwards Hall, we hosted the first PEMDAS meeting. We had seven math education students in attendance with three cohorts represented. I hope that in the future even more math education students will be in attendance and that we will

have students from each cohort represented. I think this would help enable a community amongst the different cohorts that would allow the older students to share their experiences and help support the younger students.

I genuinely enjoyed working on this project. It was certainly challenging at times, but it is exciting to know that we created an organization that will be here even after we are no longer at the University. A key part of this project for me was being able to work with two other Math Education Honors students. This allowed us to do more than what we could have done each on our own. Another part of working on this project was the unique opportunity to work with amazing faculty. Our advisor throughout this project and the advisor for the newly formed PEMDAS, Dr. Lorraine Males, was so supportive throughout this project. It wouldn't have been possible without her expertise and care for her students and the Math Education Program at UNL.