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Preparing Pre-service Teachers to Present at a State Conference

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Abstract:

As mathematics teacher educators, we have a responsibility to prepare as many people as we can, to teach mathematics in ways that foster a deeper understanding of the content. We do this by teaching current and future teachers in college programs and providing professional development to in-service teachers. A less explored way is to prepare these “students” to present ideas they have learned to colleagues at their school, other schools in their district, and conferences. In this paper, I share my experience of helping students go through the process of preparing to present over the last two years at our state K-12 mathematics conference and include some of their reflections through this process.

Background

The way most of us were taught K-12 mathematics, which focused on procedures rather than building a conceptual understanding, is very different from the way mathematics is being taught now (Bay-Williams, 2016; Hauk, Jackson, & Tsay, 2017). Students who attend the first mathematics content class for teachers assume I will lecture and/or show them how to solve each problem. They do not expect class to be more student-focused. I encourage them to work in groups, use multiple strategies to solve problems, explain and justify why those strategies work, use hands on tools to make sense of the mathematics, and problem solve. For most of my students, this is not the way their previous mathematics experience has been. Students sometimes struggle in this new environment, similar to the way some teachers struggle with implementing activities that promote a deeper understanding of the mathematics.

Some teachers have not had enough professional development due to lack of funding, but research indicates teachers need explicit experiences to change the way they are teaching (Anthony, Hunter, & Hunter, 2018). Presenting on topics that deepen mathematics content

knowledge by using best teaching practices gives teachers the opportunity to engage in activities that promote this change. Previous research indicates students can deepen their understanding of a topic and develop their academic voice through poster presentations at conferences (Wallengren-Lynch, 2018). Wallengren-Lynch (2018) used poster presentations in an academic setting as a way for students to practice presenting arguments for their final project in his course. Students responded to questions, defending their proposed argument. This is similar to my work because students are presenting content they would typically teach. They can use the experience of presenting to reflect on their presentation and make changes as they begin their career.

McGuire, Simpson, and Duke (2009) discussed how teacher educators prepared early childhood education students to present at a conference. Their experience teaching undergraduate education majors led them to the conclusion that many students do not have opportunities to attend professional conferences. They wanted students to benefit from attending, but also from presenting in this setting. They reflected on their experience helping students through this process, and came up with a framework: planning the travel, discussing finances, practicing the presentation, attending the conference, and sharing information with each other. In the article they also discussed tips from one student. For example, when preparing for the conference the student suggested that if the teacher educators facilitated a small group gathering, it could encourage students to practice their presentation. My students also indicated practicing the presentation with each other was helpful. I have also found that helping students through this process prepares them to teach a mathematics lesson that focuses on discourse, manipulative use, and encourages participants to build a conceptual understanding.

Furthermore, by preparing students to present at the conference, I am addressing all three strands of academic mindset as described in the University System of Georgia (USG) mindset

summit in 2019. Presenters from *Motivate Lab* (2019) described “Mindset GPS” as three strands that foster a positive academic mindset for our students: G-fostering a growth mindset; P-students understanding the purpose and relevance to their lives; and S-social belonging. All three parts of GPS are incorporated into this experience of mentoring students as they prepare to present. Students struggle through the process, as it is new for them but ultimately prepare enough to give amazing presentations. This experience is relevant to them because they will be teachers in the next few years, so this gives them an experience of presenting on a topic to current teachers and administrators. They feel a sense of social belonging as they work with me and each other by forming a collaborative learning group through this experience and beyond.

Through this mentorship students have a deeper understanding of the topic and become more comfortable presenting, which will make it easier for them to continue to present each year. I also learned that my students are not the only ones benefiting from this experience.

Participants in their session are taking on the role of student, and work through tasks they can incorporate into their teaching. Additionally, as a mentor I am also learning how students perceive this experience. One study indicated how beneficial mentoring relationships are for pre-service teachers (Smith & Nadelson, 2016), but other research indicates how the mentor can also learn from this relationship (Hauk, Jackson, & Tsay, 2017). The purpose of this study was to explore pre-service teachers’ experiences through written reflections as they prepare for and present at a state mathematics teaching conference.

Study

This was an exploratory study, created to better understand what students experienced as they progressed through the “planning to present” process. Student reflections from the previous year were used to make changes to the current year regarding what I expect students to do

before, during, and after the Georgia Mathematics Conference (GMC). Figure 1 provides an overview of the “planning to present” process for 2018 and 2019.

Figure 1

Overview of 2018 and 2019 process of preparing students to present at GMC

d	2018 Conference	2019 Conference
Student	<ul style="list-style-type: none"> • 4 students presenting (2 individual and 1 partner so 3 total presentations) 	<ul style="list-style-type: none"> • 6 students presenting (4 individual and 1 partner so 5 total presentations) • Also brought one student who wanted to attend sessions but not present
Pre-planning	<ul style="list-style-type: none"> • Started planning in Fall 2018 • Applied for SGA funding – all four approved • Met with students to discuss possible topics • Gave each student a power point shell so they could start with something • Students worked on a draft and we went back and forth with feedback 	<ul style="list-style-type: none"> • Started planning in May 2019 • Applied for SGA funding; only 3 of the 7 approved • Asked students to think about what they might want to present on • Met more frequently with each person face to face to help them through planning • All students met one day in Fall 2019 and did a mock presentation – each student presented for 15 minutes so they could practice and get feedback from peers before the conference • Gave students a schedule so they knew my expectations at the conference
During the conference	<ul style="list-style-type: none"> • Each student had their own room • Each student drove themselves • No requirement for students to attend other sessions or how long they needed to be at the conference • Students brought their own lunch • We met for dinner Thursday night to debrief about the conference (only 3 of the 4 students attended) 	<ul style="list-style-type: none"> • Two students per room • Carpooled • Students were required to attend 6 sessions (each 1 hour long) over the two-day conference • Students were required to arrive Wednesday night and stay until after lunch Friday • I brought lunch for students Thursday and Friday so we ate as a group and debriefed about the conference • We ate dinner as a group Thursday to debrief about the conference • Immediately after their presentation they completed a paper form which asked what they did well, struggled with, and what they might change
After the conference	<ul style="list-style-type: none"> • Students were given a link to a google form where they shared their experience and identified tips for future students • One student presented with me at GAMTE in 2019, sharing what she learned and how it impacted her (she also presented at GMC with a colleague) 	<ul style="list-style-type: none"> • Students were given a link to a google form where they shared their experience and identified tips for future students • Students were given a google document link to share information from the sessions they attended so other students could learn more teaching strategies • Three students presented with me at a department colloquium in Spring 2020, sharing what they learned and how it impacted them

Student Responses

When students were asked what advice they would give next year's students, many talked about the planning process in three parts (1) when deciding whether or not to take this on, (2) during the planning process after they chose to present, and (3) at the conference.

Deciding Whether or not to Present

When deciding whether or not to present, one student said, "*Make sure you have time to invest in this. You want to be able to do your best.*" Another suggested, "*I would tell students that if they are thinking about it, they should do it! It is a great learning experience as well as teaching experience.*" A third student said, "*It's a lot of work, but it's worth it.*" Most students indicated the experience was worth the effort they had to put into planning and presenting, but also identified time constraints.

Planning for the Conference

When preparing for the conference, one student suggested that students, "*Plan ahead and stay on top of the planning all the way up until the conference.*" Another said, "*It's best to learn as much as you can about your topic. Just as if you were preparing a lesson plan, you should prepare for your presentation in this same way. The teachers are being taught something they may have NEVER heard before and they may have questions that are outside the surface knowledge. Therefore you should be VERY knowledgeable about your topic. It will be beneficial to you and your attendees.*" When meeting with students to prepare, I asked them questions similar to questions I may ask students in class and questions they may ask their participants to deepen mathematics knowledge. I also loan each student a copy of the "*Making Sense of Mathematics for Teaching*" books (K-2, 3-5, 6-8, or 9-12) because this book is written for teachers to build a conceptual understanding of content and includes activities that can be

modified to fit the goals of the presentation. This will help my students make decisions about which tasks to use so their presentation is relevant to current teachers attending the session.

At the Conference

When at the conference, students gave the following advice, “*Rehearse what you are going to say and bring energy to your presentation*” and “*When you're doing your presentation, try to make the participants think.*” Just like when we teach, students need to prepare and anticipate what participants might ask. They should encourage participants to think about the content, instead of sitting there passively in a presentation. Another student said to not, “*stress too much about the presentation itself. The audience is usually really friendly, and just wants to learn and hear what you have to say, not judge you. When I told other attendees that I was a college student who was giving a presentation, all of them were surprised that I was tackling such a feat as a college student and were really supportive of me, regardless of whether or not I stumbled through it.*” This student identified *why* I chose this conference. Participants are usually friendly and excited to learn new things. I also talked to an administrator after one of the presentations and she said she was excited for the experience these pre-service teachers are getting. She said these students are definitely going to have an advantage as they search for a job.

Conclusion

This is a work in progress, so I am using suggestions from students in the current year to make changes to the process for the next year. I shared tips from 2018 students with the 2019 students, hoping to decrease their anxiety a little. For example, one student my first year suggested that students commit to the whole conference rather than just their presentation, and the next year it became a requirement for students to attend 6 sessions. This is similar to

reflections McGuire, Simpson, and Duke (2009) made, indicating students should choose to attend sessions, but still maintain realistic expectations. We do not want students to get overwhelmed with all the sessions and activities available to them. Students should choose specific sessions they think will be most helpful for them and we, as teacher educators, can help.

Another suggestion in 2018 was that students practice with each other before they attend the conference, which also happened during my 2019 iteration. Wallengren-Lynch (2018) suggests poster presentations are a good way for students to get preliminary feedback, just like the practice presentations on campus were a good way for students to give and receive feedback. This process allowed them to practice a portion of their presentation to a group of their peers, who were also invested because they would be presenting at the same conference. In a low-stakes environment, students are more likely to see the feedback as constructive. This practice presentation gave students an opportunity to make changes to their presentation before they presented at the actual conference. In 2020 I plan to start much earlier and hold an informational meeting for everyone before the students make a decision of whether or not to present. Moving forward, I plan to keep collecting student responses as we progress through the process and hope to create a framework for other teacher educators to follow.

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