Fundamental Commitments of My Work as a Mathematics Teacher Educator

2019 Judith E. Jacobs Lecture

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Even if it had not been Randy Philipp who invited me give this talk, I would be starting it with something I learned from him. Early in my career I had the opportunity to spend about 6 weeks at SDSU, and while there, I attended some of Randy's classes and his project meetings. One image–two images, really–from one of his classes have stuck with me since I first saw them over 20 years ago.

Randy showed the image below (Figure 1) to his preservice teachers and explained that this is the typical way one approaches teaching mathematics. That is, the teacher looks at the child's thinking through the lens of what the teacher knows to be correct mathematically. This leads to a posture of judging students' mathematical thinking against canonical mathematics, which generally means judging it as correct or incorrect.

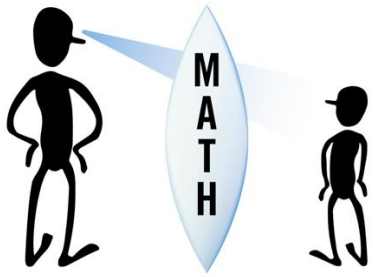

Figure 1. Teacher looking at student's reasoning through the lens of mathematics.

Then he showed the preservice teachers another image (Figure 2) in which the teacher attempts to see the mathematics that the student is seeing in that moment. This approach assumes that whatever the child is thinking makes sense to the child–is in some way logical based on what the child understands. And it is the teacher's role to try to see how things look through the student's eyes and why they make sense. Then, after understanding what the student is seeing, the teacher can be more effective in posing questions, offering an alternative task, changing the numbers in the task, or taking other action that will help the child leverage their current ways of thinking to make sense of the mathematical ideas.

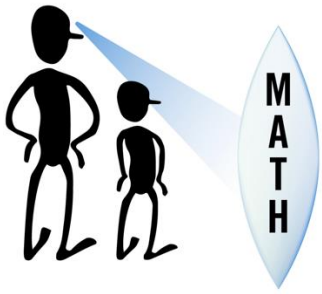

Figure 2. Teacher trying to see mathematics as the student sees it.

Note that in both of these approaches the goal is for the student to develop correct mathematical ideas. It is the focus and the path that are different. One sees the student as a capable mathematical thinker who can build on that thinking. The other places the power in the mathematics and the teacher. Another key difference in these two images is that implicit in the second one is curiosity on the part of the teacher. In a recent book chapter, Randy, John Seigfried, and Eva Thanheiser refer to this curiosity as *intellectual humility*. The teacher humbles themselves to say "I do not know what this is like for you; I want to experience this the way you are experiencing it." This stance leads to the child feeling valued and at the center of the learning instead of the mathematics being at the center of the learning.

Although these ideas captivated me nearly 25 years ago, I am guessing this is old news to pretty much everyone in this room. This second picture gets at the heart of what we believe about the teaching and learning of mathematics, and it shapes our thinking about teacher education.

I want to take this idea up one level. Let's replace the teacher with a teacher educator, and let's replace the child with a preservice or inservice teacher (Figure 3). This represents the fundamental commitment I want to talk about tonight. I strive to see teachers and their thinking and their actions–about mathematics and about pedagogy–the same way we urge teachers to view students and their mathematical thinking.

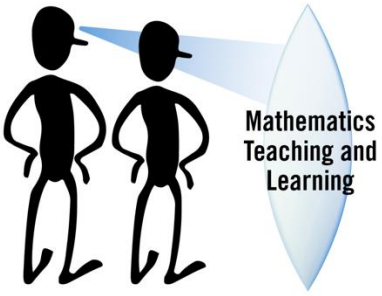

Figure 3. Teacher educator attempting to see practice through a teacher's eyes.

Teachers are sense makers. Just like the child who counts 28-29-2010, preservice and inservice teachers' knowledge and past experiences shape their actions in the classroom. Their beliefs are a result of their lived experiences. And just like the teacher in the second picture, we as teacher educators need to demonstrate the curiosity and intellectual humility that allows us to understand how and why something a teacher did or said came from a place that made sense to them.

Preservice teachers come to us wanting to be good teachers. Do some of them come with naïve ideas about what that means? Do some of them think they already know how to be good teachers and do not have much to learn from us? Do some of them think they will learn everything of value in their field placements? Yes; absolutely. Inservice teachers go to work every day believing that they are making a difference in students' lives. Some of them teach mathematics in ways that do not build conceptual understanding or positive dispositions about mathematics. Some of them do not use technology effectively. Some of them do not see and elicit the brilliance in their diverse students. But rolling our eyes and complaining in frustration does not

change things and potentially does damage. Imagine if a teacher rolled her eyes when a child said 28-29-2010. Our job is to realize that each of teacher has traveled a path as a learner and teacher that has led them to this moment–to this particular set of knowledge, understanding, and beliefs that shapes their thinking and actions. Our job is to make sense of that, help them make sense of it, and then introduce perturbations that will help them grow. We need to figure out how to leverage their current thinking to open up new ways of understanding a situation–just as we do with students.

Most of us adhere to this image when addressing content with teachers. But it is frighteningly easy to slip into the first image when addressing pedagogy with teachers. We can be quick to criticize teachers' directed telling in response to students' struggles or their blindness to their privilege or their desire for a recipe for teaching algebra effectively. We are usually not critical to or in front of teachers; we generally engage in this teacher bashing with one another. Do not get me wrong–I am not saying we are not entitled to be frustrated or sometimes even amused by things teachers do and say. I am not saying we should not vent to one another sometimes. I am not saying we have to put on rose-colored glasses and pretend that everything teachers do is wonderful. We are all here because we want to improve mathematics teaching and learning, and to do that we have to be able to articulate the problems we see. I am saying that we need to raise our level of self-awareness when engaged in more public discourse about preservice and inservice teachers.

Just like students, teachers come to us with varied experiences, beliefs, and knowledge, and we must differentiate our instruction. Rather than expecting the same activity or article or video to lead to the same results for all teachers, we need to be equipped with multiple ways to reach teachers and not get frustrated or give up when our first try does not work the same way for everyone. For example, I hear a lot of frustration around efforts to educate teachers about issues of diversity, equity, and inclusion; but I do not always hear a lot of conversation that acknowledges that – just like us – teachers are in different places with respect to their own identity development, cultural consciousness, and privilege. Similarly, teachers are in different places with respect to student-centered teaching, questioning, technology, representations, or pretty much any other topic you want to name. We need to differentiate our instruction just like we advocate for teachers to differentiate their instruction with students.

In short, we need to consciously respect teachers and respect where they are and how they got there. We need to avoid deficit approaches in our thinking about teachers. We need to stop teacher bashing.

We have all seen how teachers are treated by public, media, and by policymakers. What is ironic to me is that we get upset when we hear others bashing teachers, but we often do not hear it when we do it ourselves. Not only can we not play a part in this teacher bashing, we must also help to illuminate the complicated work that teachers do.

I am going to turn my attention now to how I try to enact this commitment to respecting teachers across my teaching, research, and service, and then I will talk about how I think this commitment might play out for our field more generally and for AMTE specifically. But before I do, let me be clear that I am not claiming to be perfect. I do not achieve this commitment 100% of the time.

My goal in giving you examples is not to claim that my practice is a model but to provoke thinking and further discussion among us about how we think about and interact with teachers.

Teaching

- *Artifacts of practice and field experiences:* I use artifacts of practice in my teaching (e.g., videos, student work, teachers' lesson plan, teachers' reflections on their teaching), and I am explicit with my teachers before I bring out those artifacts of practice about how we are going to talk about the teachers and the students. Similarly, with field experiences, when my students come back from the field and we are debriefing the experiences they have had, I am explicit about the fact that even if they have been out there for 2 weeks or 2 full days a week for a semester, that and artifacts of practice represent a snapshot of a moment in time. We do not know what has led up to that moment for that teacher or those students. We do not know what comes after it. We do not know enough about the teachers and the students to be making a lot of judgments. So, I ask my students to unpack the assumptions that are behind their comments about what they see in a video or a lesson plan or a mentor teacher's classroom and to be really thoughtful about the language they are using. When they make statements, I try to twist them to a posture of curiosity and intellectual humility. One of the ways I see teacher educators falling into this is the way we talk about mentor teachers. When we sit around and talk about placements for our students, we often talk about mentor teachers in ways that are not flattering. I can remember as a preservice teacher being told that I should never talk about a child in a way I would not want their parent to hear, and I think about that mentor teachers we work with that way. Would I want that teacher's child or partner or principal to hear me talking about them that way? We absolutely have to make good placements for our student teachers. We absolutely have to make some valid value judgments about teachers' practice. But we can be more careful how we talk about mentor teachers.
- *Articles:* I try to be thoughtful about the articles I have my students read, whether they are undergraduate students, classroom teachers, or doctoral students. If I use an article that contains teacher bashing, I talk about it explicitly–either why I am using that article for other purposes or how we might think about that particular piece of the article.
- *Teaching assistants:* I work closely with my teaching assistants as we plan, deliver, and debrief instruction and grade papers to think about how we are talking about preservice teachers. It is really easy to get halfway through a pile of papers you are grading and make some derogatory comments about where preservice teachers might be in their thinking. Instead, I try to reflect back on what we have done in class that has led up to this, what else is happening in other classes that might be leading to this, what they are seeing in schools that might be leading to whatever problem we are seeing in the assignment we are grading. It all comes back to curiosity. This is not the answer we wanted, but what led them to this answer?

Research/Scholarship

- *Writing:* In my writing I try not to write anything I would not want my participants to read. That does not mean I am not critical about what they have done. It does not mean I do not use literature and theoretical lenses form the field to critique and position what they have done. Rather, I try to write about it in a way that is respectful and explains how they got to where they are so I would not be uncomfortable with them reading it.

- *Data analysis:* I also try to share my data analysis with my participants. I am not always able to do that, but one of my all-time favorite data collection experiences was with a teacher I studied for 4 years from her preservice into her induction years–who was and still is to this day an enigma to me. At the beginning of the study I would have said she is someone I would not want teaching mathematics to my child if I had one. She was competent mathematically, but she did not like and she did not want to teach it. And in the space of a semester or a semester and a half, she completely changed her teaching practices. She did not change her core beliefs about mathematics as a discipline; she still does not like it. But she changed the way she viewed the school mathematics that she was teaching to students to the point that by the end of her student teaching, I would put anybody in her classroom. Her transformation defies absolutely everything in the literature about how beliefs are supposed to work and how slow they are to change. And to this day, I do not quite have her figured out. I wrote an article in which I tried to figure her out and asked if she would be willing to read it and give me feedback. She read the whole thing, all 40 pages, and we sat in her living room for 2 hours as I recorded a conversation between us about that paper. She reflected back several years on what she was thinking as a preservice teacher and how her thinking evolved over time. That is absolutely my favorite piece of data I have ever gathered in my career. This idea of sharing my data analysis with participants (again, not every time) is a way of respecting my participants and their ability to make some sense of what they are doing and to help me make sense of what they are doing.
- *Data collection:* Prompted by a suggestion from David Stinson when we worked on a project together, we used an interesting data collection technique. We went into the literature and got some articles about preservice teachers and their practices in the classroom. We had our participants read the results and discussion sections and asked what they thought of them and whether it resonated with their experience. We asked what matched and did not match their experience. I will admit to being skeptical of this idea when David first suggested it, but the teachers loved it. They enjoyed it, and it gave them a way to say "I can see how people would say that, but that is not really what went on for me. For me it was like this." It gave them some language to talk about their learning. This data collection method was a way for us to be curious and intellectually humble and say "I do not know everything there is to know about what this is like for you. Here is another explanation. Use that as a springboard to tell me more about your experience."
- *Presentations:* I try to be thoughtful about how I am presenting my data and results at conferences. Yesterday I was in a session where somebody was sharing preservice teachers' work from a methods class (reactions to watching video clips), and as people were discussing this work, I heard what would qualify as teacher bashing. It made me think more carefully about how to frame questions differently to lead to a different kind of conversation about data from teachers.
- *Doctoral students:* When working with doctoral students as they shape their research questions, design their studies, analyze their data, and write it up, I try to help them take on that posture of curiosity and intellectual humility as well so that the field continues to maintain that posture.

Service

- *Professional learning:* The way I think about this commitment playing out in service is in conducting professional learning with teachers. An ideal implementation of this commitment would lead me to say that I do not do professional learning unless teachers have been a part of the needs assessment and a part of helping, at some level, design what it is they want and need in the professional development. Here is where I tell you the story of my fairly recent downfall. My recent example of where I did not honor this commitment occurred about 3 years ago. Our university system put money on the table–a million dollars over 3 years–for STEM education. All you had to do was write the proposal, and you would get the money. Our office of STEM education wanted that money. You had to meet 3 goals. One was about STEM courses in introductory biology, mathematics, and engineering courses to reduce the rate of students getting Ds, Fs, and withdrawing, using more active learning in the classroom, and using peer learning assistants. The other 2 goals had to do with preservice teacher education and K-12 student education via their teachers. You had to meet all 3 goals to get the money. Of course, the RFP came out with a really short time frame and at the worst possible time of the year for classroom teachers in May. Being a good little administrator who wanted to play ball with other people on campus, what did I do? I went and sat in the district office of our partner school district with which we have a longstanding partnership and on which I served on the board of education for 12 years. I sat there with the associate superintendent for teaching and learning, the secondary math and science coaches, the district's assessment coordinator, their research and grants coordinator, and the 2 people form mathematics and science education at UGA who were going to do this work. The district personnel looked at their data. We look at what the people who were going to do this work had interest in and skill to do, and we designed some professional learning to do with teachers. No teachers were consulted. And you can probably guess where this story is going. It comes time to roll out this project, and we cannot get in teachers' classrooms We cannot get teachers to respond to emails. We cannot get principals to respond to emails. We cannot get this thing off the ground. We eventually get in a couple schools and classrooms, but at the end of the year we have basically nothing to show for the grant. It gets worse. I am part of writing an annual report on this project in which we blame the fact that there was heavy administrative turnover in this district (superintendent and 4 of 6 principals in the schools we were working in). We did an evaluation at the end of year 1, and it was dismal. The teachers were painfully honest about the fact that they saw this as a waste of time, it was not meeting their needs, it felt like one more thing they had to do. They did not understand why they had to do this. We wrote the year 1 report and blamed everybody but ourselves. And then that same group of people sat in that very same room again and planned year 2. Without any teachers. Despite the fact that the secondary science coach and math coach both said "It is clear that we need teachers' voices in this." We took this evaluation data as teachers' voices. You can guess how year 2 went. Year 2 did have some bright spots. There were some teachers who connected with the mathematics educator and science educator and had great experiences. But it was nowhere near what was proposed. We did not do an evaluation at the end of year 2; we knew what that was going to say. And at the end of year 2 those same people sat in a room again and said "We're pulling the plug on this. Teachers do not want to do this. This is not meeting their needs. It's not connected to what the district is doing. We are not respecting and honoring the work that teachers do." Teachers actually said to us, "Do

I have to do this?" Here we were thinking that we were bringing them all these resources, human and otherwise, and they wanted to know if they had to do this. The answer was no. That is a recent and painful example of where I failed to live up to this commitment that I said I had. I let expediency and being a good team player get in the way of what I really believed about mathematics teacher education.

- *Reviewing:* Reviewing articles, grant proposals, and conference proposals is an opportunity to enact curiosity and intellectual humility. I try to ask questions and offer feedback in the form of "Have you thought about it this way? What about…?" as opposed to saying "You are teacher bashing; this should not ever see the light of day."
- *Organizational service:* Serving on committees is another place to enact a commitment to respecting teachers. I have been really fortunate to serve on the *JRME* editorial panel, the *MTE* editorial panel, and various other service opportunities where I have had a chance to question how teachers are portrayed and ask "Where are teachers' voices in all of this?"

Work of the Field

- *Teachers:* As we think about the work we do as a field at large, one of my thoughts about how we apply this commitment is to think about teachers as our partners in our teaching, research, and service instead of thinking about them as the object of the work we do.
- *Fellow teacher educators:* We can also think about how we work with our fellow teacher educators. In the P-8 world, those might be teacher educators in language arts, science, social studies, and general curriculum and instruction. In the 6-12 world it might include mathematicians and statisticians, curriculum directors, and coaches. Because those people can give us some alternative perspectives on our work. The early childhood education program I work in at the University of Georgia used to have a tradition (which we are trying to bring back). Our students go through in cohorts of 25-30 students, and before the semester starts, all of the faculty who are teaching that cohort get together to share syllabi, readings, talk about the big ideas that we have because there is actually a lot of overlap in what we are trying to teach elementary education majors. We look at assignments and readings. Sometimes we make adjustments; sometimes we do not. At least if we are offering conflicting or competing information we know that we are doing it, and we know how that might be affecting out students' development. We try to meet again in the middle of the semester to check in on the group as a whole and on individual students. I cannot count the number of times where in one of those meetings one of us has singled out a student who we had concerns about, shared those concerns (about the quality of work, professionalism) and some other teacher educator who worked with them in a different context said "That is not at all my experience with them." Hearing those two pieces of information and then hearing from the other teacher educators and supervisors, we were able to get a much better picture that challenged the assumptions than any one of us might have made on our own. We can leverage engagement with our teacher education peers, including our partners in mathematics and statistics. We probably ought to quit the teacher bashing of mathematician and statisticians as well as we do our fair share of that. For example, we say that some of them "get it" and some of them do not.
- *Individual responsibility:* At the level of the field we all have an individual responsibility to speak up at our own institutions, organizations, conferences, and places where we have

privilege when we hear teacher bashing and to invite our colleagues to call us on it when we do it.

AMTE

- *Standards:* We need to be really careful not to weaponize the AMTE standards. We can use them as a goal to aspire to but not as a yardstick to beat people over the head with when they fall short. We cannot control what everybody else does with the standards, but we can control what we do with them.
- *Publications:* We can control what we publish, conference proposals, position statements, and other things we put out on the web and on social media.
- *Advocacy:* We have influence with other organizations and with policy makers. In the advocacy session this morning there was a question about what advocacy AMTE can do when compared to organizations such as NCTM, which has full-time staff, officers with release time to work for the organization, and funds to pay lobbyists. AMTE sits at the board of the CBMS with the ~20 other organizations, along with TODOS, NCTM, and others. AMTE has a voice–one of the few voices for teachers and teacher educators–and has the opportunity to influence the discourse around teachers and teacher education. I would argue that AMTE does have an advocacy opportunity in that arena.

If any of what I have said resonates with you, I hope that you will pick one piece of your practice as a teacher educator and think about how a commitment to respecting teachers and seeing teachers as sense makers might play out in your practice. What do you want to be mindful about What do you want to be curious about? What might you want to change?

As we work tougher to improve mathematics teaching and learning, I wish for all of us curiosity, intellectual humility, flexibility, and critical friends to help us along the path.