**Sample PST Responses to Final Reflection Questions**

Upon completion of the Take Home Responding Assignment, PSTs were asked:

How has the in-class instruction and this take-home assignment improved your ability to respond?

How do the responses you craft now differ from those you gave prior to this instruction on responding?

What strategies do you use to develop your responses?

What implications does learning how to notice and respond to student thinking have for you in your future work with students?

Below are example PST responses to each of the above prompts that show potential learning in relation to the assignment goals. Recall that the learning goals of this assignment as presented to PSTs are:

1. Develop a variety of strategies (e.g., alternate tasks, review, questioning) for responding to student’s thinking in order to further their understanding of a mathematical concept.
2. Become aware of the power of carefully chosen questions in eliciting and developing student’s mathematical thinking and reasoning as well as moving students to a higher level of understanding.
3. Practice developing questions that will help elicit and develop student’s mathematical thinking in response to student work.
4. Consider the importance of holding back from telling students something they could work out for themselves.
5. Reflect on ways of responding to students’ thinking.

**Improved ability to respond through questioning:**

*Before learning about the importance of questioning, the idea of understanding student thinking wasn’t apparent to me. I knew that students were thinking about the work they were doing, but I didn’t think about using their thought processes to deepen their understanding or identify misconceptions. Now that I understand how to ask questions to solicit their thoughts about their work, I can get a sense of where they are and how they got there. It is so much easier to identify misconceptions and how to fix them when we look at the reasoning the student has created (or learned). My responses to students have changed from dispensing knowledge when wrong answers or processes are presented, to pausing and asking students to explain their thinking. I want to know why a student thinks their answer is possible (or impossible) and how they justify their thinking. If a student has a deep understanding of the content, they will be able to justify their thinking and if they are unable to do so it is my job to provide the framework for them to build that understanding.*

**Attending to student learning objectives:**

*The responses that I craft for this assignment differ from those you gave prior to this instruction on responding, because they are more based on multiple representations rather than procedure. In the last portion, responding to Zander, before I would have wanted to correct the errors in the symbolic work that he did. But because the learning objective specified that the student should understand multiple representations of the equations and solutions, I saw the importance of how a different representation could help him understand the symbolic, but was also what mathematicians often do. I see the importance of students making the connection between concepts on their own rather than me telling them the connection.*

**Strategies included using the 4 characteristics of a good response as a guide:**

*Some strategies used to develop responses are to be mindful of the 4 characteristics of a good response while working with the student. Working on the problem before hand to anticipate what problems the students will have so I will have some responses prepared beforehand. I would have the students talk me through their work so it gives me deeper insight to what they are doing then the writing on the page alone.*

**Noticing and responding to student thinking will support future teaching:**

*I think that learning how to notice and respond to student thinking will have future implications on me in two ways. Firstly, I think that I will be able to preemptively head off some of these difficulties by lesson planning with these responses in mind. Teaching in a way that strives for understanding and not necessarily for correctness could be very effective. However, this type of lesson planning would likely have to happen for a second or third lesson (so you have some sort of idea of what the kids are struggling with). I also think that this learning will help me in grading student work. In examining these samples, I got some experience evaluating work with students’ thoughts in mind, as opposed to simply looking for right or wrong answers. I looked for where they went wrong, what they were likely thinking, and how I could help them fix these problems. Through grading in this manner, I can have somewhat of an idea what to include in my lessons for the next class. I think that learning how to respond to student thinking will greatly help me in my classroom.*