

After several weeks of observation and reflection I decided to address indicator two; Varying the student and teacher roles in ways that develop independence and interdependence of learners with the gradual release of responsibility to students. After discussing my current practices at the time with my mentor, we decided that I was consistently providing opportunities for students to collaborate with each other to discuss and apply skills and concepts presented as well as providing opportunities for students to take responsibility for some learning activities during Writer's and Reader's Workshop. We decided that I was exceeding these standards often during Readers and Writer's Workshop, by having students turn and talk during read alouds and mini lessons, as well as working with writing partners. However, I needed to focus on providing the same opportunities and instruction during math. At the time, my math instruction was often too teacher driven and bound the workbook pages. I was not providing my students enough opportunity to work collaboratively, develop new learning and facilitate learning activities. At the time students were working independently, in their workbooks, and I was driving and controlling instruction and conversations. In addition, I was not reaching enough of the class during my mini lessons. Students who were strong in the area of mathematics were doing the majority of the talking and answering of questions during mini lessons. The results of this situation were that my struggling students were often content to not participate or pay attention and then rely on me for assistance during the independent practice portion of my math block. I needed to find a way to involve my whole class in student driven discussions and learning.

After conferring with my mentor I decided to use my colleagues as a primary resource. I conducted several interviews. In addition I also referred to several professional texts. These sources included Multiple Intelligences in the Classroom by Thomas Armstrong. My goal was to understand how other professionals provided opportunities for students to analyze, question

and/or develop new learning as well as to develop and facilitate individual and collaborative learning activities during math instruction.

I found the interviews with my colleagues to be very beneficial. Some of the recommendations included implementing math centers and games in order to provide fun, hands on, collaborative work. Turn and talk opportunities, in order for students to work collaboratively and learn from each other. Providing open ended inquiry based questions, in order for students to develop their own learning through exploration and collaboration. Have students work in small heterogeneous groups to solve problems, in order to work collaboratively, learn from each other and allow opportunities for me to differentiate my instruction. Several teachers also recommended having the students assume roles within each group in order to have them take a greater responsibility in facilitating their own learning. These roles were recorder, group leader, materials and presenter. The recorder was in charge keeping the results of their work, the group leader made sure that they were following directions and staying on task, the presenter was in charge of sharing his or her group's results with the class, and the materials gatherer was in charge of gathering and putting away the group's materials. Thomas Armstrong's Multiple Intelligences in the Classroom reinforced many of the ideas my colleagues provided me. It also provided me with the understanding that it was vital to include as many as the intelligences as I could in my instruction. For example, providing physical hands on measuring experiences every day (bodily kinesthetic), collaborative group work (intrapersonal), and opportunities for reflection after each lesson (interpersonal). I also brought my students outside to measure the field and black top in meters, so students could experience real world application in nature (naturalist intelligence). I also decided to utilize a turn and talk strategy that I use with my class during Reader's and Writer's Workshop. I taught my students how to

“grow” their turn and talk conversations. I modeled, provided guided and independent practice in this strategy. This strategy involves teaching students a variety of phrases and ideas in order to push each other’s thinking. Students were taught to ask their partner’s questions like “can you give an example?” or “what do you mean by that?” or “Can you give me more or add on to that idea?” These stems would be posted up on the Smartboard during turn and talk opportunities.

In order to address the selected indicator I modified the third unit from the second grade Growing With Mathematics program. Unit three is a measurement unit, so it provided many opportunities for my students to learn with hands on, collaborative activities. These opportunities included measuring objects and distances with inches, centimeters, meters, feet, yards and nonstandard units of measurement like tiles or base ten blocks. In many instances I adjusted the lessons and created my own materials in order to get my students moving around the room and collaborating to estimate, measure and discuss their results instead working strictly from their work and discussion books. An example of a typical lesson from this unit would lesson 3.8, in which students are expected to use a ruler to measure lengths in centimeters. Originally, students take part in a lesson primarily using a discussion and workbook and measuring objects on those pages using centimeters. I adjusted the lesson to fit the workshop model. The class took part in a whole group ten to 15 minute mini lesson in which the concept of a centimeter was reviewed and the proper technique for using a centimeter ruler was discussed. After the mini lesson, I observed that most of the class had a firm understanding of centimeters and how to measure using them. After modeling and providing guided practice the class was released to measure objects around the classroom. For the small group of students whom I observed struggling during the mini lesson I provided further support during the independent practice of the lesson. I gave them explicit instruction in how to use a centimeter

ruler. After which I provided support in estimating and measuring objects around the classroom. Students worked in heterogeneous pairs to estimate and measure the lengths of objects (pencil, desktop, stapler) using a centimeter ruler. They recorded their results on a form that I created. After the independent practice of the lesson, the class met to discuss their measurements, effective measurement techniques, and real world applications. During the conversation Student A commented that his estimates were close to his measurements because he was taking what he knew about previous measurements to make his estimates. Student B commented that she tried to measure our kidney table length, but she didn't get a good measurement because it was curved, she decided to measure only flat objects room that point. Students C and D, whom worked together discussed how when measuring the length of the Smartboard, they had to work together and mark where the ruler ended with their finger to get an accurate measurement and then go back and add to find the total length. I adjusted most of the other lessons in the unit similarly because of the high level of student achievement, student engagement and students taking a greater responsibility in their learning.

At the conclusion of this unit, several things were apparent. My students clearly enjoyed the hands on aspect of this unit and were consistently meeting lesson objectives. More than any other unit in this year's math instruction students were engaged and taking a greater role in their own learning. In addition, students were analyzing and developing new learning through collaboration with peers. This was evident through interaction and observation of pairs and groups as well student contribution to group discussion. Students were routinely discussing the proper ways to estimate length using different units of measurement, for example realizing that they should use what they already know about previously measured objects to make a reasonable estimate. They also discussed ways to ensure accurate measurements, like double checking their

work and making sure they held the ruler straight. In addition, the class constantly reviewed and discussed proper measuring techniques or strategies like starting at the zero mark instead of one or having your partner mark with their finger if you are measuring lengths greater than your measuring tool. By having the students assume roles like group leader, recorder, presenter, and materials gatherer within their groups or pairs, they were taking a bigger role in facilitating and directing their own learning. My struggling math students were also clearly more engaged and willing to participate during math instruction. By having them collaborate and discuss their thinking with group members or turn and talk partners, there was a noticeable increase in their confidence, their engagement throughout the entirety of our math block and their overall learning. This identified group students were also doing a better job of applying that day's lesson to their independent work, becoming less reliant on me for assistance. Students were also actively "growing" their conversations, in turn enhancing class discussions and student learning.

Due to the success I experienced after implementing the suggested strategies of my colleagues I will continue to structure my math instruction in the workshop model. My class is very familiar with the structure of the workshop model from Reader's and Writer's workshop, so it makes sense to continue to implement it. By providing students with explicit modeling and guided practice it empowers students to apply their new learning to their independent work. The closure or sharing at the conclusion of the lesson is also a great time for students to share their successes and failures and to receive feedback from peers, not only their teacher. I will continue to focus on providing my students with opportunities to work collaboratively to analyze and develop new learning. In order to do this I need to strategically review and plan each unit, similarly to how I did for this unit. I need to continue to confer with colleagues and incorporate the multiple intelligences into my instruction. In addition I will provide them with more

opportunities to take greater roles in facilitating their own learning. By structuring my math instruction this way my students are more engaged, meeting lesson objectives and taking greater responsibility in their own learning.