Rationale: Standards 4, 6, & 7

A Mathematics Lesson

By Emily Hunter

To demonstrate my proficiency in Standards 4, 6, and 7, I selected a lesson that I taught in a high school math classroom on the quadratic formula. I included the following documents: SOE 2 & SOE 4. I also included all of the materials that I used when I taught this lesson.

To demonstrate Standard 4, I used multiple instructional strategies to help achieve my learning target. I started by asked the students some questions about what they currently knew about the quadratic formula. I then did a quick lesson on the quadratic formula. I worked some of the problems out myself on the whiteboard. Mr. Rafferty worked some of the problems using the iPad to project his work up on the SmartBoard. We also had the students work the problems out independently, and then we checked their answers together. We used a Kahoot quiz which allowed for self-assessment and incorporated student use of technology. We also had the students talk us through solving the problems. I used questioning techniques to produce high-level thinking about particular parts of the problem. These were just some of the instructional strategies. During the lesson, I tried to call on different students so that all students would have a chance to answer/talk us through the problems. I knew that I did not have any ELLs, IEPs, or gifted students in this class, so during the class, I had to pay close attention to pick out student who needed differentiation. There was one student who was confused during one of the problems. So while Mr. Rafferty was working another problem, I helped this student complete the problem that he was stuck on. During the exit slip portion, one of the students did not complete her exit slip, so I asked her nicely if she would complete it for me, and I used physical proximity to ensure that she continued working on the problem until it was completed. I made sure that all fifty-two minutes of the class period were maximized. I had more than enough problems created in case they were needed; however, we ended up having more problems than necessary. During the lesson, we were able to cover a lot of material. We reviewed over factoring, learned about the quadratic formula, worked a couple different types of quadratic formula problems, took a Kahoot quiz, completed an exit slip, and even had time to review over their tests that they had just taken. This was an effective way to use the time in the classroom because we could of had the students just keep working quadratic formula problems; however, they understood how to complete these problems, so that would have been overkill. We used the materials effectively. The students had their own calculators that they used to help them solve each problem. We also used the SmartBoard, whiteboard, iPad, Kahoot quiz, and computer to teach the lesson effectively. The physical space was a great environment for learning. The room was not cluttered at all. It was very organized. Throughout the lesson, I used questioning techniques to scaffold learning. For example, I asked the students what they got for the discriminant or what the discriminant of this problem tells us. I used numerous questions such as these to facilitate higher order thinking.

For Standard 6, I implemented the use of technology into my lesson. The bell-ringer, lesson, activity, and exit slip all included some form of technology. I used technology such as Word, PowerPoint, Gmail, a printer, a scanner, Kahoot, and a laptop when I was creating the lesson. I used the laptop to create the PowerPoint, bell-ringer and answer key, handout and answer key, email Mr. Rafferty, create the exit slip, scan in the answer key, create the Kahoot quiz, and fill out the lesson plan. All of this technology was used so that my students would be able to see the information through a handout, PowerPoint, whiteboard, iPad projection, etc. This would help the students learn the material better and through different means. Not all students learn in the same way, so I tried to incorporate multiple methods in my instruction. The PowerPoint helped make the material more interesting to view because it was a brightly-colored, Superman theme instead of just a boring handout. During the lesson, we also used an iPad and calculators. The calculators allowed the students to work the problems themselves and integrated the important element where students use technology to improve instruction. I used the Kahoot quiz to assess student learning. This was an activity that allowed the students to demonstrate what they learned and also communicate that learning. I wanted to have a way to immediately communicate what the students knew and what they did not know. I also had a self-assessment portion on this quiz. This was a fun and effective way to have student use technology and allow them to self-assess what they knew and did not understand. I used my PowerPoint to provide the students with the exit slip. I allowed them to use their calculators to help them complete their exit slip. I also emailed Mr. Rafferty the results of the exit slip so that he would know how the students performed on the exit slip. I made sure that my use of technology was legal and ethical. I did not plagiarize, and I created the problems myself. I did not use a handout that had been created by someone else.

After the teaching of this lesson, I took the time to meet with Mr. Rafferty and reflect on how we felt the lesson went (a demonstration of my proficiency in Standard 7). I had filled out the post-observation document after I had taught the lesson, so we made sure to discuss all of those topics so that I could add in areas of growth that Mr. Rafferty noticed as well as areas where we could have tweaked the lesson. We discussed other instructional strategies that we could have added to the lesson based on the data. However, the students did really well on the lesson so we decided that we would not have tweaked much. We might have just gone a little more in depth. I corrected the exit slips and determined how many of my students met my learning objective and how many of them were below my learning objective. We also discussed how the Kahoot quiz had given us some information on how our students performed since it communicated student learning to us as well as the exit slip. I had Mr. Rafferty fill out an evaluation on all ten Kentucky Teacher Standards. This allowed me to determine areas where I could grow professionally and in my teaching style. I also discussed these areas with him.

I have been blessed with the opportunity to create many lessons during my years in the education program. I can definitely see a difference between a lesson that I wrote in ED 210 compared to one that I wrote in ED 414. It is exciting to see how far I have come. At first, filling out a lesson plan seemed like such a daunting task. It took me so much time, and I always needed to ask my professors a bunch of questions to complete the lesson plan. However, now it does not take me as long to create a solid lesson plan. I have learned numerous instructional strategies; however, I feel like I can definitely learn some more in the future to implement into my lessons. This is actually an area of growth that I wrote down on my PPGP. I plan to work on improving this area in the future. I also think that I will have to get very creative with organizing lessons that do not incorporate solely lecturing and working math problems. I want to make sure that my lessons use a variety of instructional strategies that align with the standards and meet individual student needs.